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INSTALLATION AND USER GUIDE FOR METRICI LPR

General presentation

Dear customer, we want you to obtain the best results in using this software. We kindly ask you to carefully read the entire manual before using the product and keep it for future consultations

- Read the user manual before installing and launching the program
- Follow the instructions
- Keep this guide at hand for future consultations
- Read all the documents

Main characteristics:

Metrici LPR is a complete solution for recognition of license plates placed on vehicles in accordance with the existing standards in each country.

- It works in 'free flow', which means analyzing the video streams from IP cameras in real time, on trigger, or a combination of the two.
- The system can recognize an unlimited number of license plates in the same frame;
- Syntax analysis and simultaneous recognition of plates from several countries;
- Distributed operation (multiple cameras in multiple locations), with centralized reporting and administration;
- Predefined actions for each recognized license plate: open barrier, send warning e-mail, pop-up display on screen, change traffic lights, send SMS;
- Multi-user reporting and administration interface with secure access and viewing rights for each location and user;
- Multi-threading operation with auto ranging based on the number of cores/threads available.

Metrici LPR can be used, day and night, for traffic monitoring systems, tolling and vignette control systems, parking, access control, border monitoring, industrial weighing systems, outdoor advertising auditing, gas stations and many other applications.

The user of the **Metrici LPR** must be aware that this software includes two solutions: one for license plate detection and recognitions – the **Metrici engines** and the second one- a interface for managing one or more locations and the surveillance cameras for each one - **Metrici LPR Web Interface**.

The whole detection and analysis system is composed of three modules integrated in **Metrici LPR**:

The **ACQUISITION** block consists of one or more IP cameras, one for each monitored access point, and auxiliary equipment (IR illuminators, PoE switches etc).

The **PROCESSING** block consists of one or more computers containing software for real-time analysis of incoming video streams received from the IP cameras. Each interconnected camera needs its own analysis application. Analysis applications are multi-threading and, therefore, they work faster on multi core and/or multiprocessor systems. Multiple analysis applications can be used simultaneously on the same computer. You can use more analysis applications in the same time on the same computer

(Details in in **Chapter 5- Settings and using Metrici Control Panel**)

The **ADMINISTRATION and REPORTING** block is in fact a web interface application that receives data from the analysis application and can display them in a user friendly way. This application can be located on one of the computers for ANALYSIS or a completely independent computer. Between the PROCESSING and ADMINISTRATION AND REPORTING blocks, there is no need to have IP connectivity on the local network; it is sufficient to have a public network allowing traffic on port 80.

(Details in **Chapter 4 – Settings Metrici LPR Web Interface**).

For an optimum operation, we recommend installing **Metrici LPR** as exposed bellow on on a computer meant for this purpose only.

For the software **Metrici LPR** to run, it needs a computer with 64 bits Linux OS. We will describe the process of installing CentOS7 operating system.

Note: In case you already have a computer running on CentOS 7, you will begin installation process with Chapter 3.

Also, while this installation guide includes some data about the settings in Metrici LPR Web Interface, for a more complex knowledge of all software performances and settings, we highly recommend you to read also the User Guide.

CHAPTER 1

Installing CentOS7

1.1 Kickstart CentOS installation

A way to install Metrici is kickstart method – this is a completely automatic option and will result in creating new partitions on your system: 8 GB for SWAP and the rest of the disk reserved for ROOT.

CAUTION! In case the system isn't new and has already some data written on it, the installation will delete everything on this computer when installing the operating system.

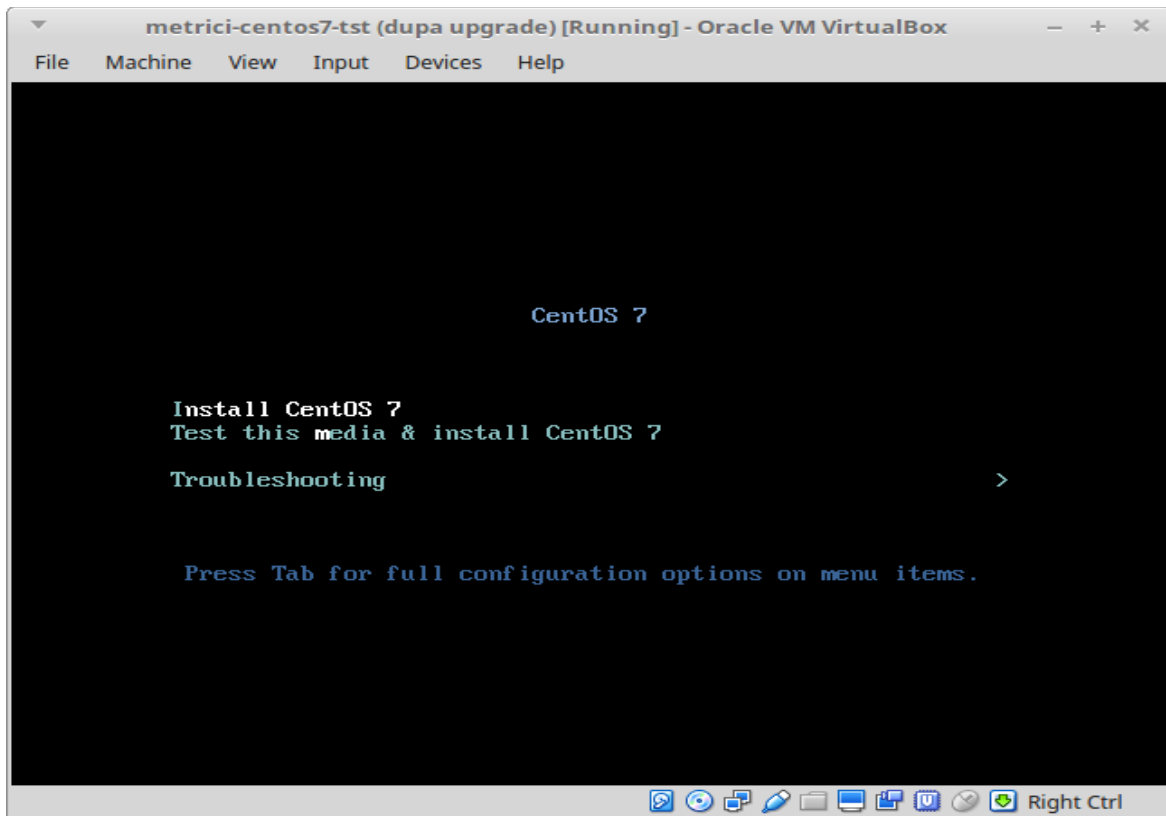
NOTE! For any type of CentOS 7 and Metrici LPR installation (kickstart or manual) it is mandatory to have internet access during install. After that, the web access is no longer mandatory and Metrici can work offline.

After downloading the image for CentOS you can boot it and follow the next steps. You can find the operating system on Metrici site at http://support.metrici.ro/operating_systems/

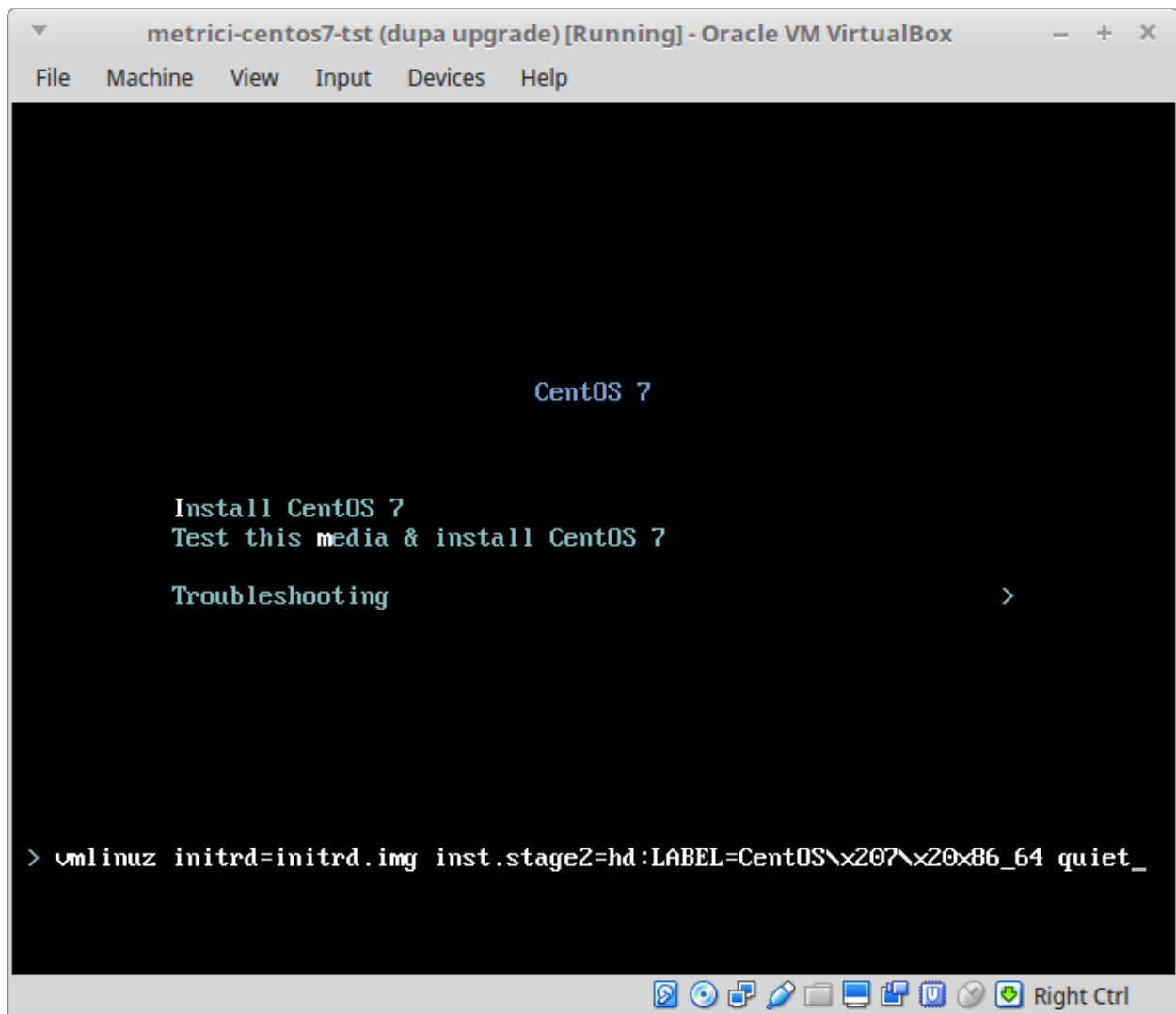
Download the Operating System and make a bootable stick.

NOTE! Before the installation, go to BIOS and make sure the PC will NOT in UEFI mode and will make the first boot from your stick.

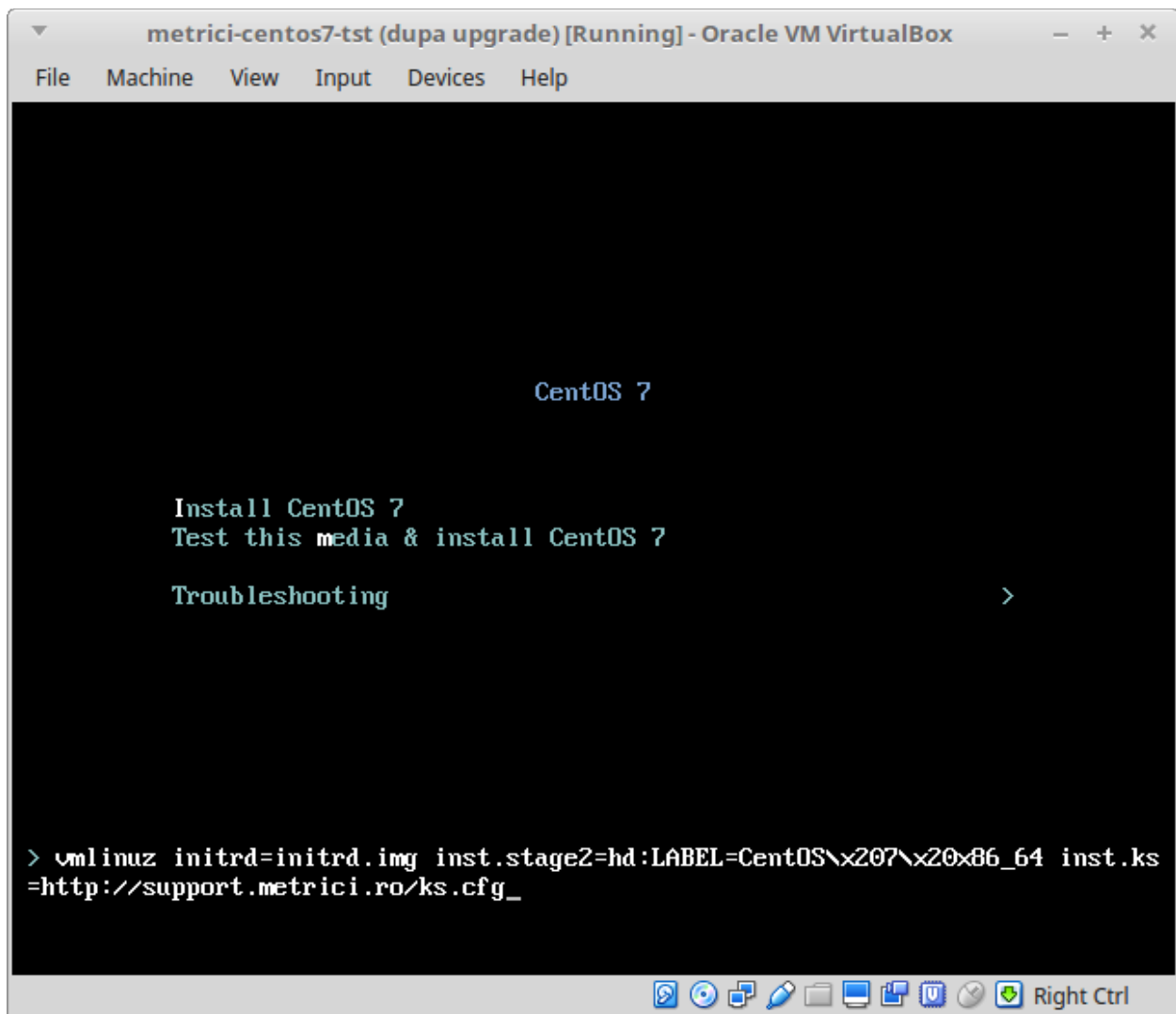
At the first option screen, as in the next image, using the keyboard go to option Install CentOS, but **DO NOT PRESS ENTER!**



Press Tab instead. You will notice some parameters on the bottom of the screen. See next image.



Add **inst.ks=**<http://support.metrici.ro/ks.cfg> at the end of the code and then press Enter. See the next image.

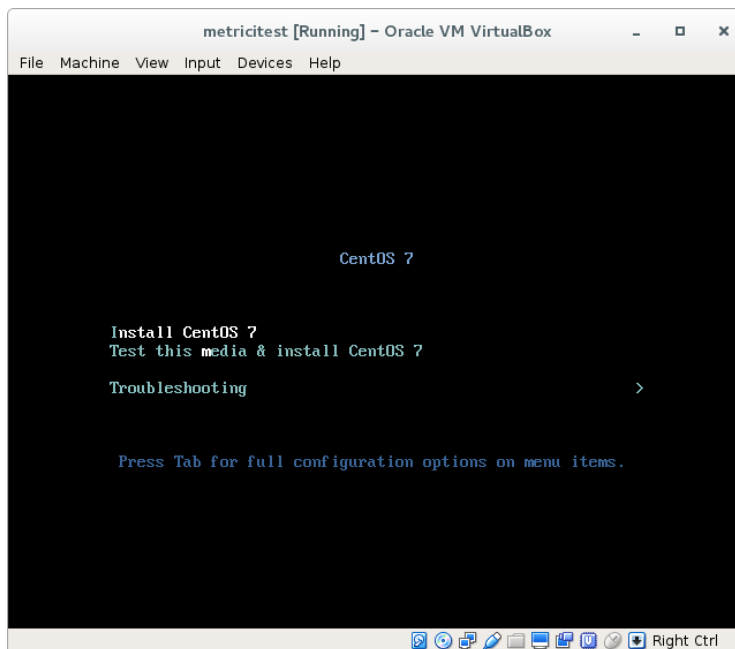


CentOS and Metrici software will be installed and all the settings made.

1.2 CentOS manual installation

You can download the DVD image for installation at the address:

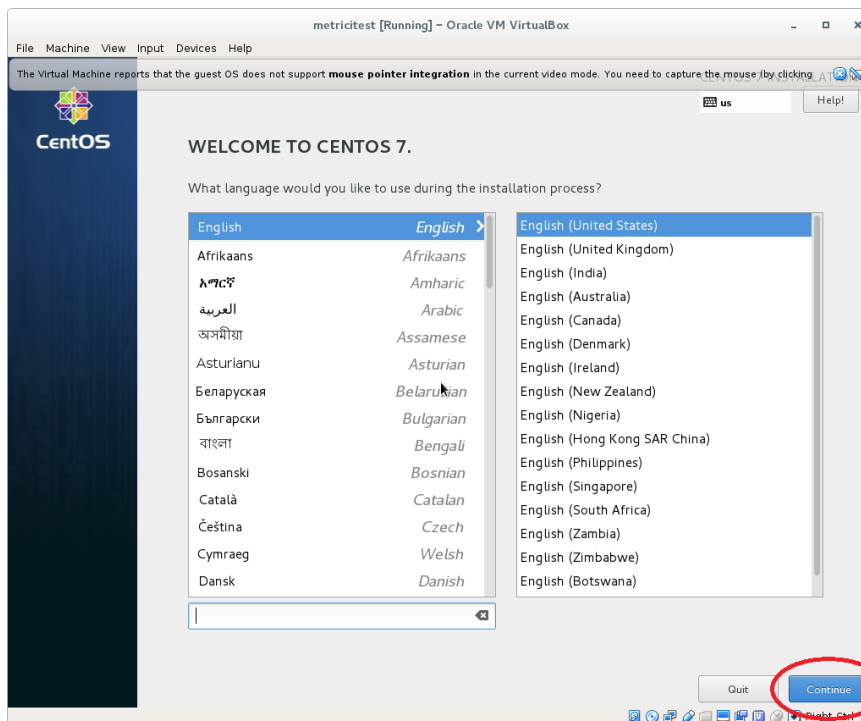
http://support.metrici.ro/operating_systems/CentOS-7.0-1406-x86_64-DVD.iso



After the boot, using the keyboard arrows, choose option:

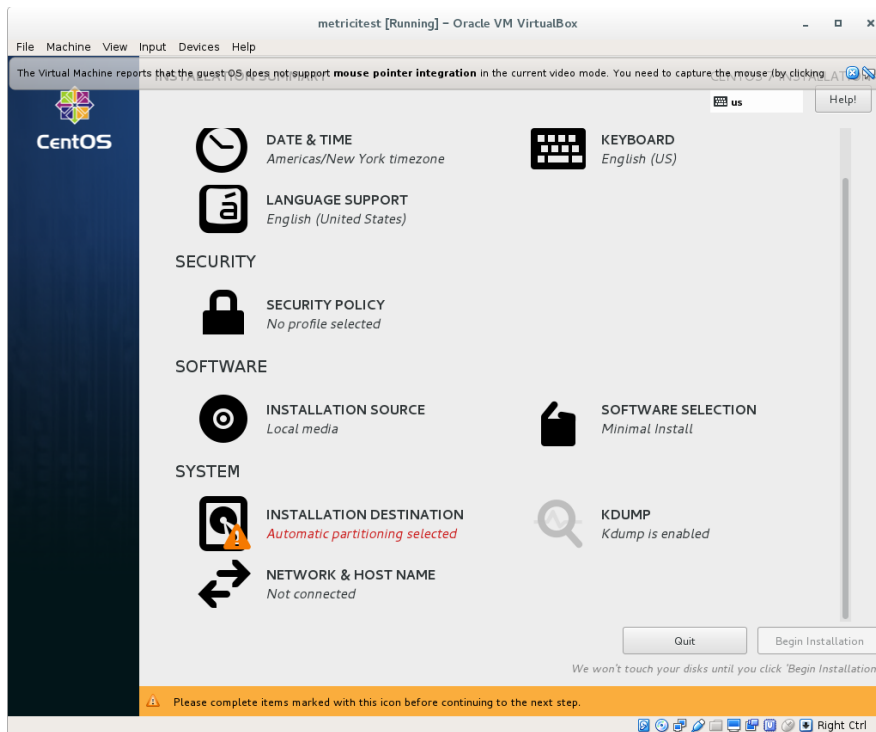
Install CentOS 7.

This command will launch the process of installing Linux CentOS7, under which the software Metrici LPR will run.

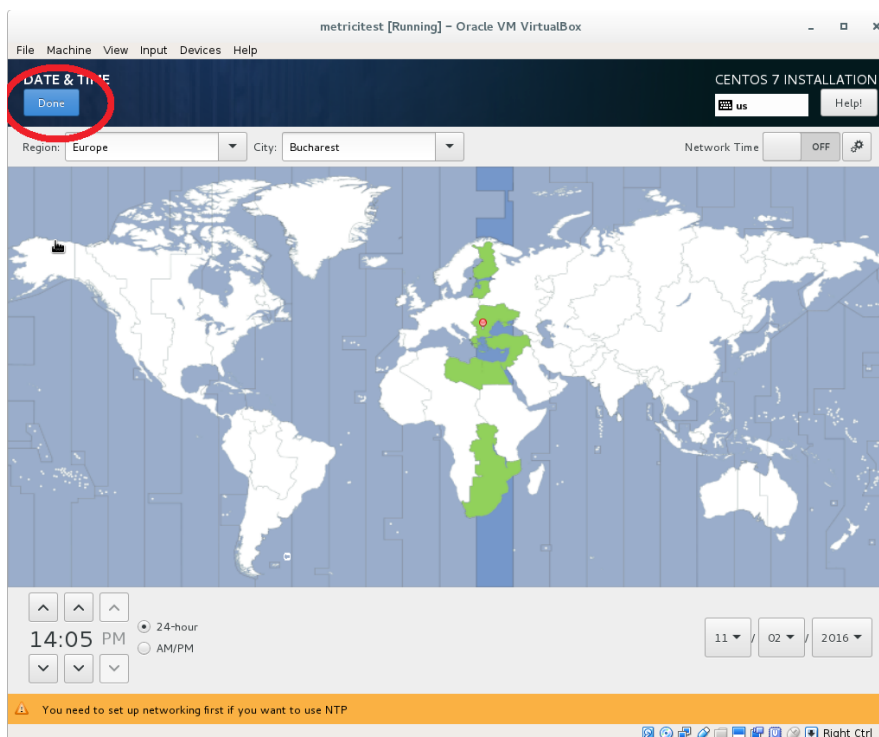


Select language (e.g.: English) and the keyboard type (e.g.: us).

Continue



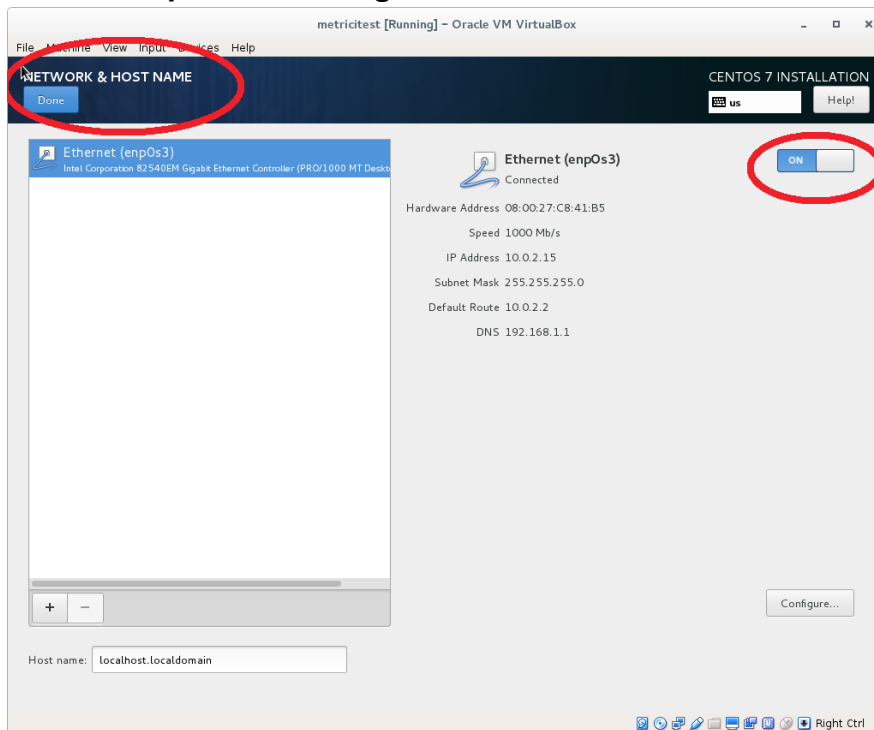
Before the actual installing process, you need to change the default settings



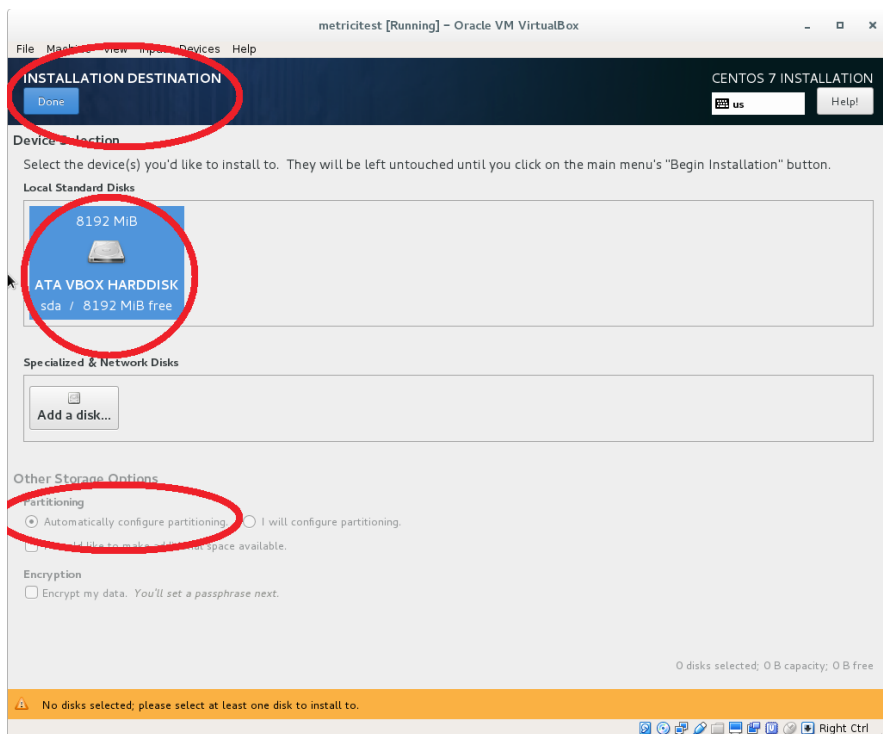
Pushing the **DATE & TIME** button, you will set the region. Go back in the menu, clicking the **Done** button, upper left.

Important! The computer must be connected online and have an internet connection

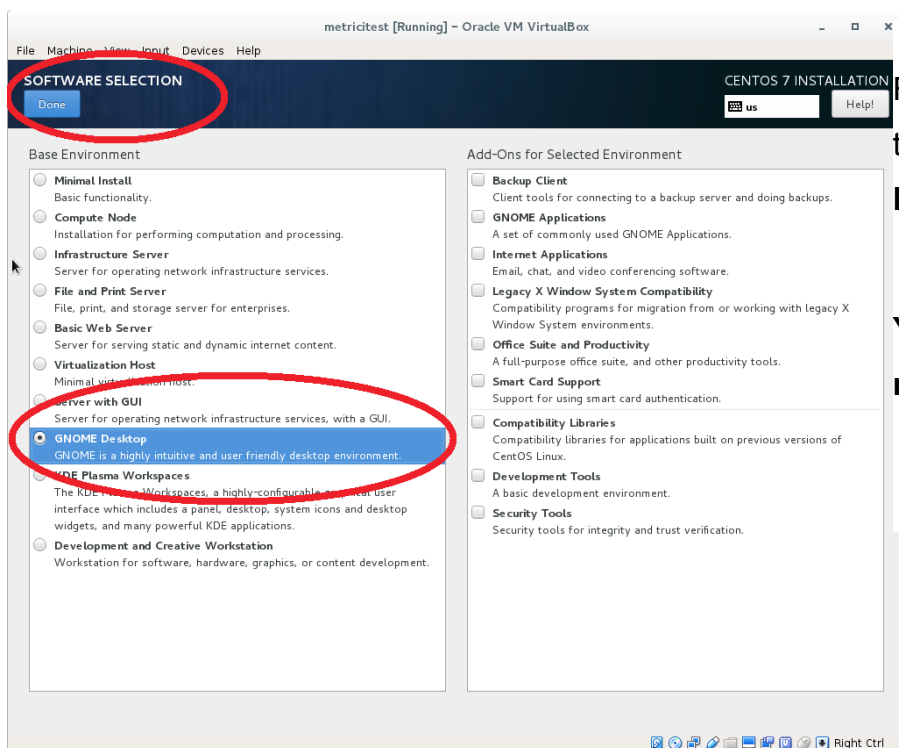
Next steps in installing do not necessary need to be taken in the explained order, but it is imperative taking all of them!



The tab **NETWORK & HOSTNAME** will activate network interface from the button ON/OFF.

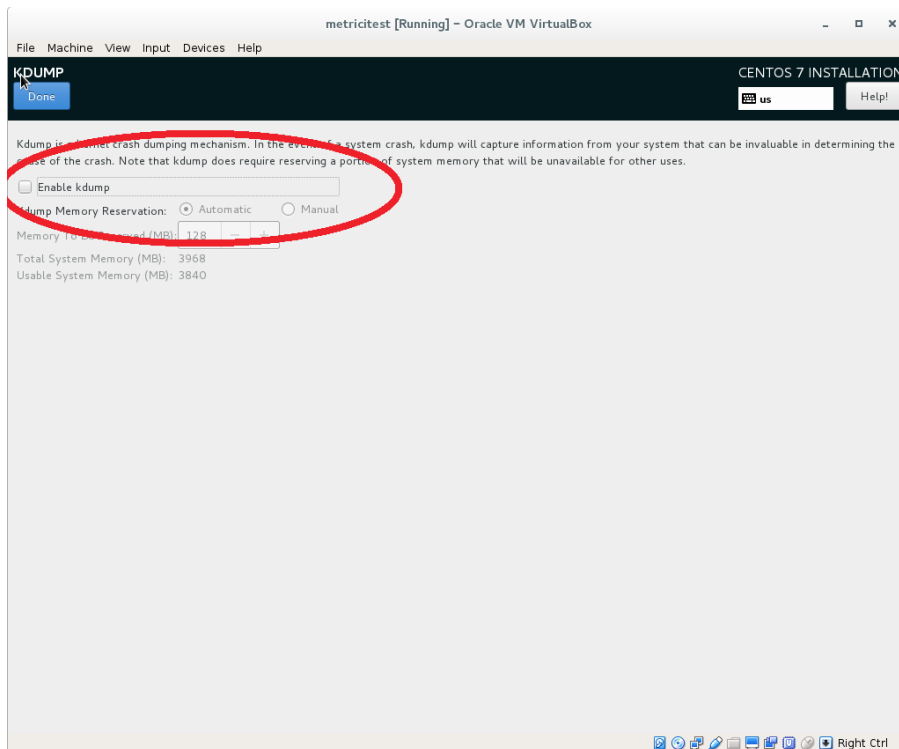


From **INSTALLATION DESTINATION** tab, select the local disk on which you want to install and type of partition (we recommend: **Automatically configure partitioning**). After choosing, go back with **Done** button.



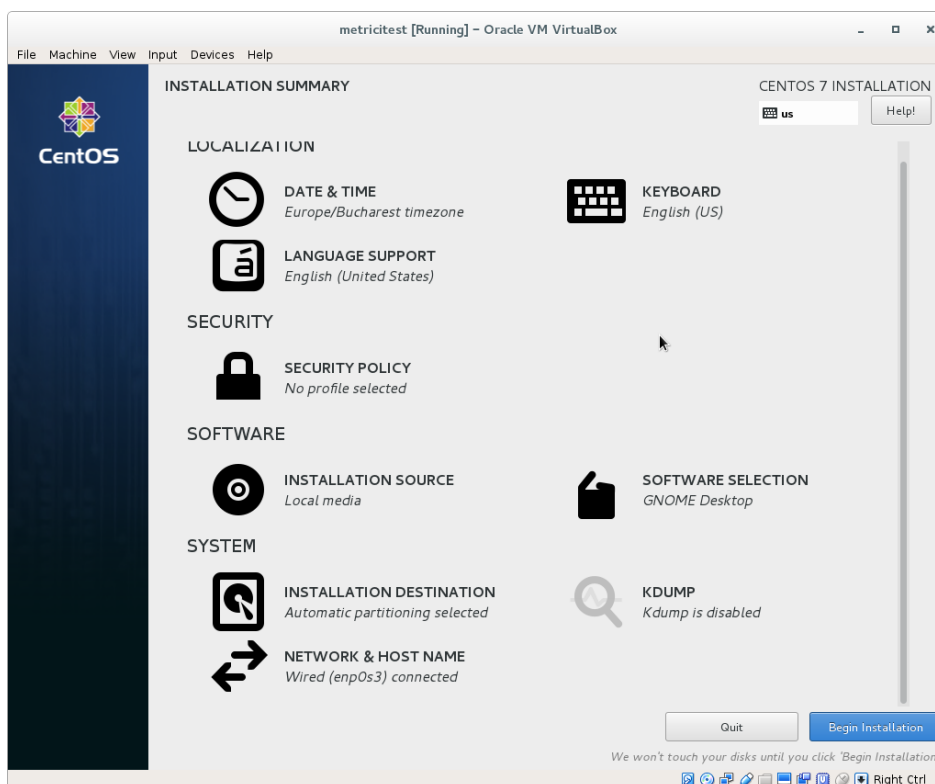
From **SOFTWARE SELECTION** tab, select option **GNOME Desktop**.

You will check nothing on the right side

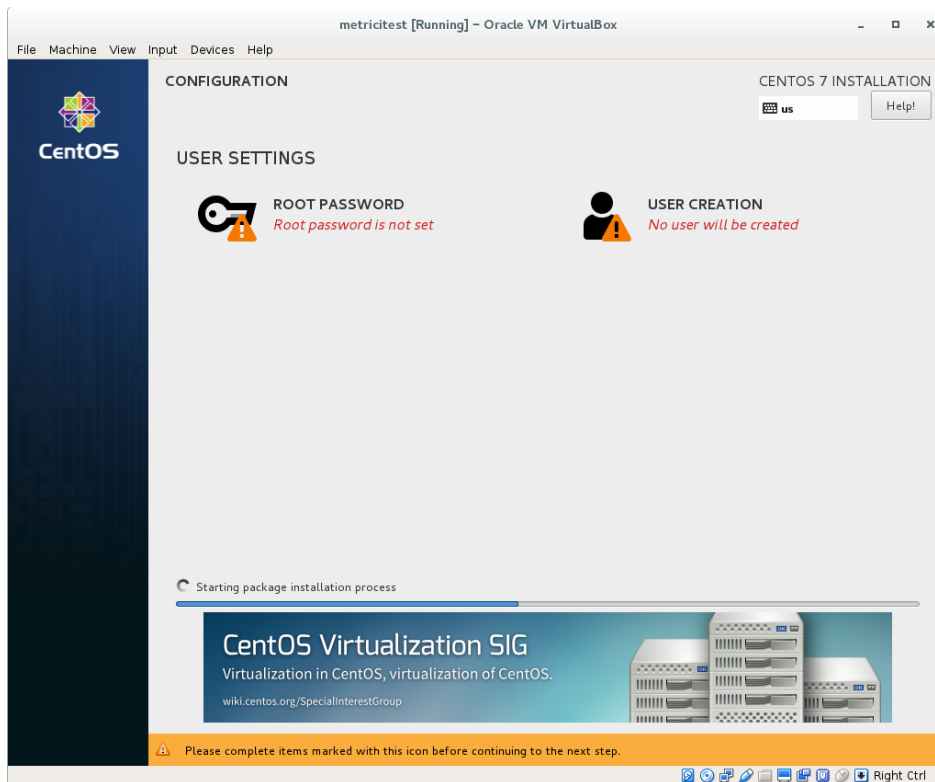


INSTALLATION SOURCE sets the place from where the operating system will be read. In our case can be a DVD, a USB or a web address as mirrors.xservers.ro/centos7.

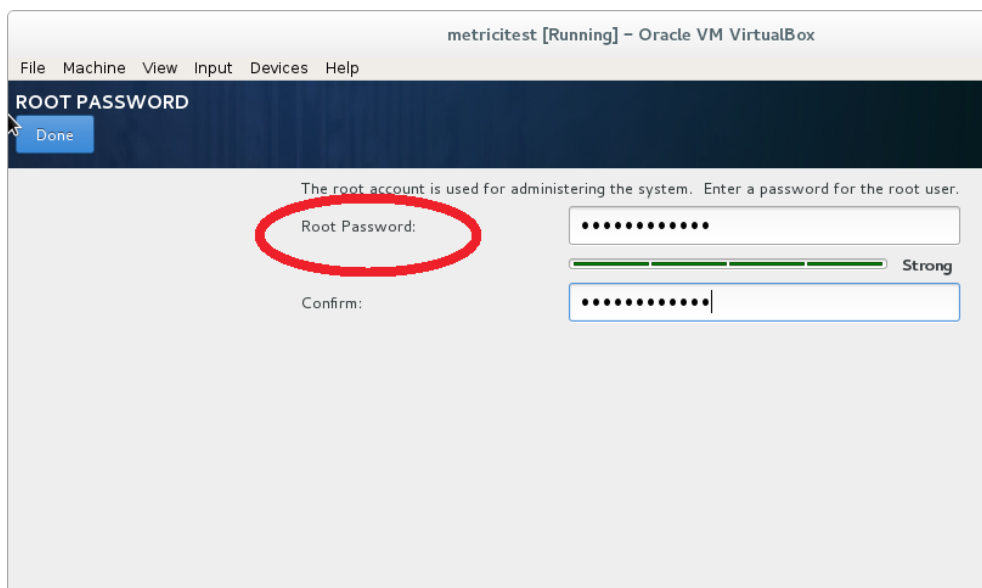
In **Kdump** menu, you will NOT check **Enable kdump** option



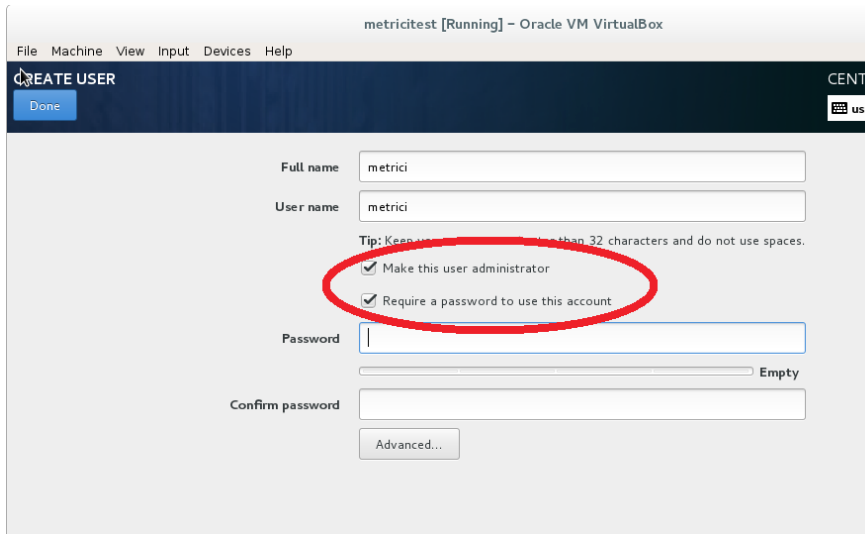
In the end, the installation screen should look similar to this image



Launch the installation with the button **Begin installation**. While it is working, you can set root password (administrator) and add a user



Choose **ROOT PASSWORD** option, write a password and confirm it. Remember these settings



From **USER CREATION**, create a new user

IMPORTANT! It is mandatory to check the option **Make this user administrator**. Wait the end of installation, reboot.

CHAPTER 2

First settings after the reboot

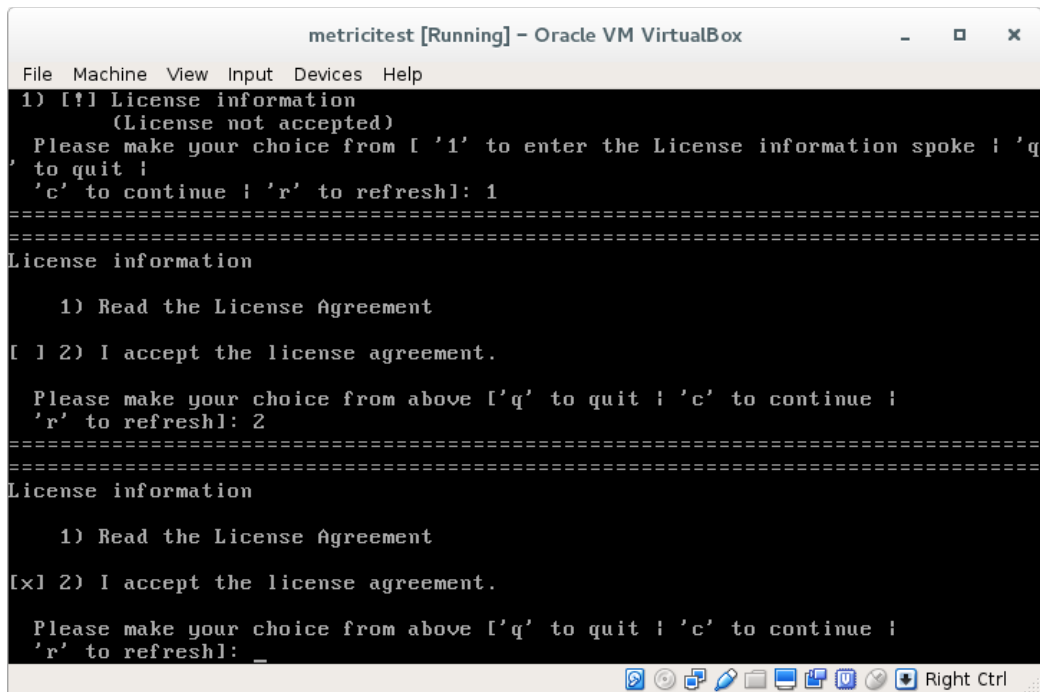
After the first boot, the system will ask for you to read the license agreement. You complete this task by choosing **LICENSE INFORMATION**.

In case you accept the terms, confirm by checking option **I accept the license agreement**.

You may continue after you click **FINISH CONFIGURATION** button, on the lower right.

NOTE

It is possible that during the reboot, the system to ask for license agreement in a written text as in image bellow. In this case the steps explained above will be ignored.



```
metricitest [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
1) [!] License information
   (License not accepted)
   Please make your choice from [ '1' to enter the License information spoke : 'q'
   to quit :
   'c' to continue : 'r' to refresh]: 1
=====
License information

   1) Read the License Agreement
[ ] 2) I accept the license agreement.

   Please make your choice from above [ 'q' to quit : 'c' to continue :
   'r' to refresh]: 2
=====
License information

   1) Read the License Agreement
[x] 2) I accept the license agreement.

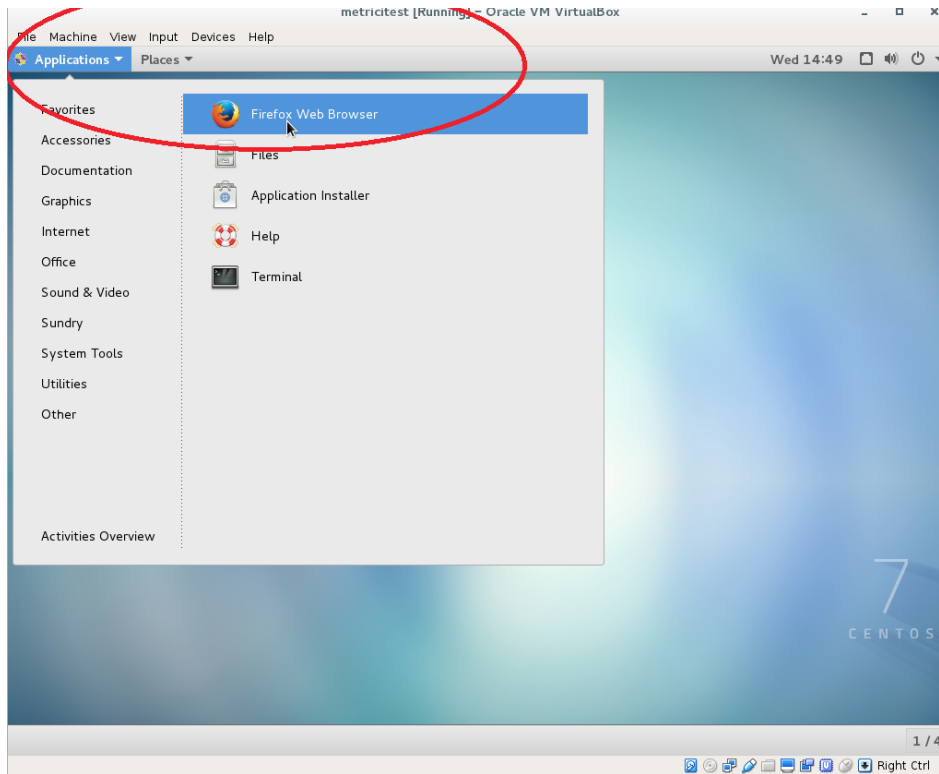
   Please make your choice from above [ 'q' to quit : 'c' to continue :
   'r' to refresh]: _
=====
Right Ctrl
```

After the reboot, you can authenticate by using the user and password defined during installation.

You navigate through the last settings, click Next.

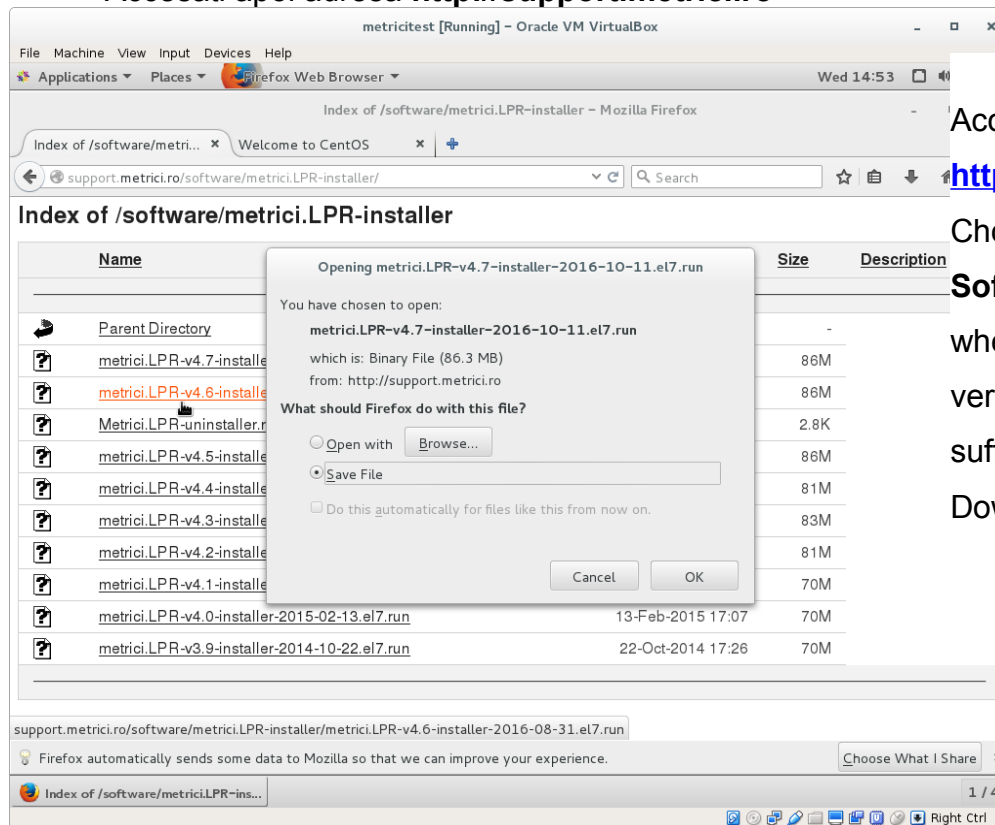
CHAPTER 3

Download and install Metrici LPR



For **Metrici LPR** kit download, open Firefox browser from **Applications** menu, upper left.

Accesati apoi adresa **<http://support.metrici.ro>**



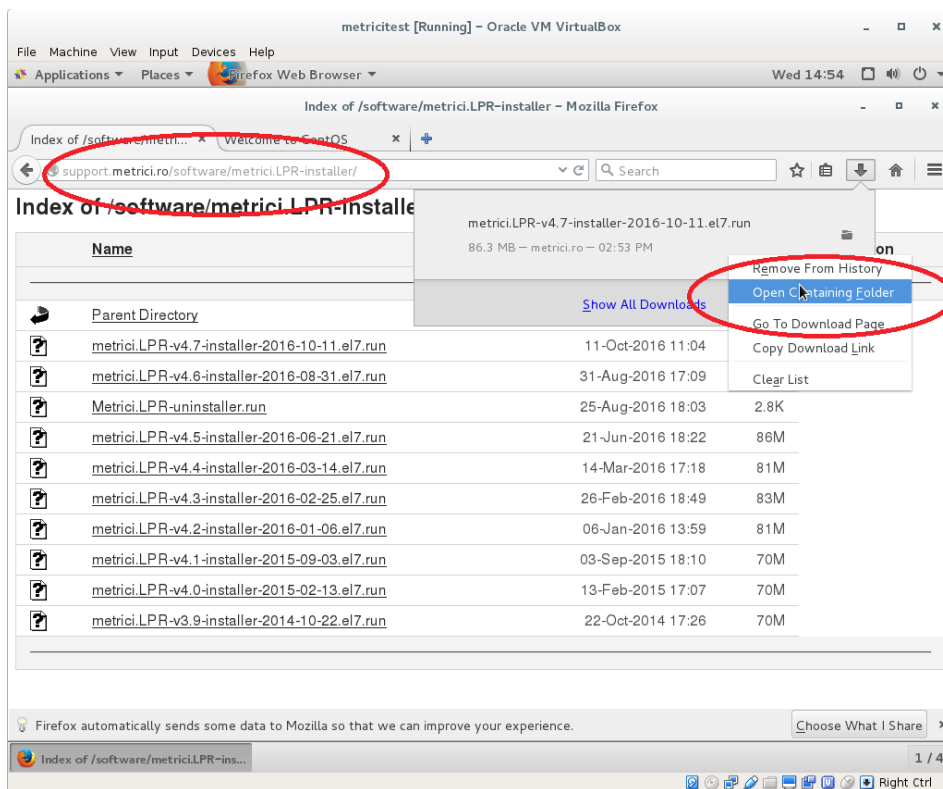
Access the address

<http://support.metrici.ro>

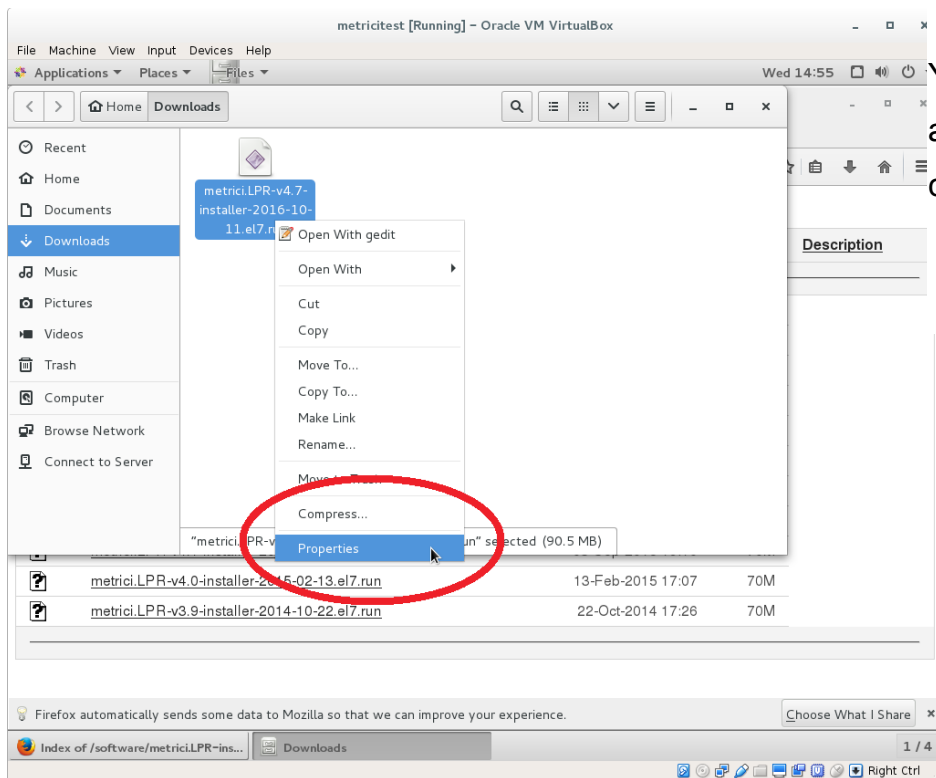
Choose section

Software/metrici.LPR-installer,
where you can find the latest
version of the software, with the
suffix **el7.run**

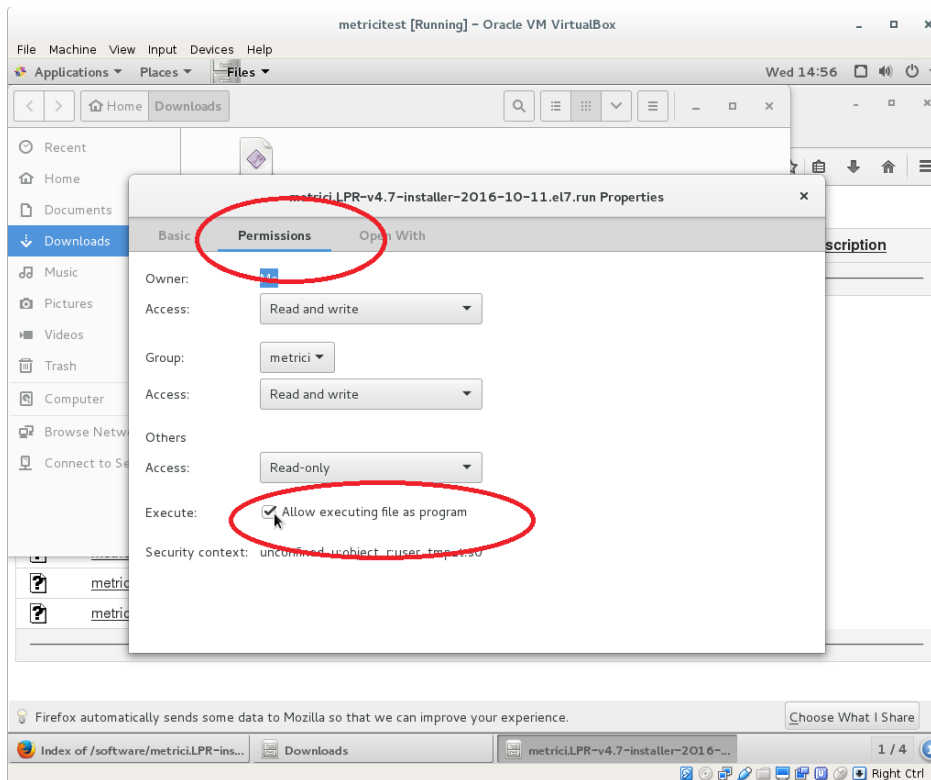
Download and save it on disk



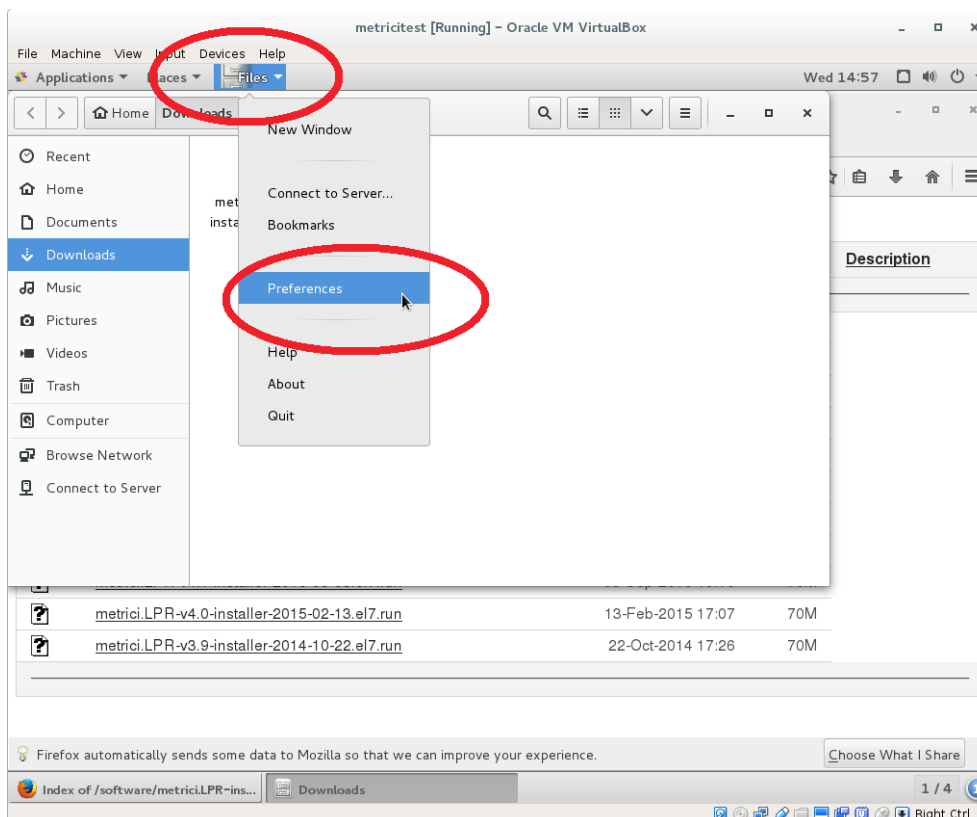
Open the folder where the file was saved (right click – Open Containing Folder).



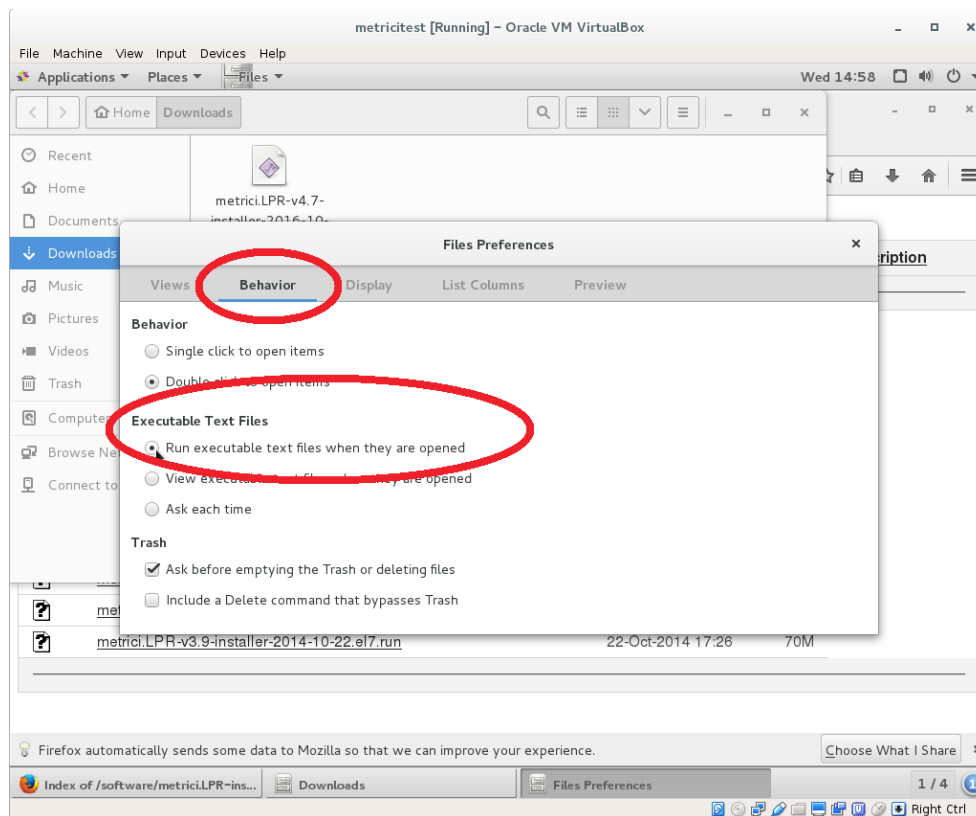
You need to change the administration rights for the file (right click on the file–**Properties** menu).



In the **Permissions** tab, check the option **Allow executing file as program**.



You access the menu **Files**, submenu **Preferences**, on the Operating system menu bar



In the **Behavior** tab, check the option **Run executable text files when they are opened**.

Double click on the installation program to launch it. When asked, write the password for the user you are logged in CentOS7.

Wait for the installation to end, and reboot.

CHAPTER 4 METRICI LPR WEB INTERFACE SETTINGS

Metrici LPR once installed will modify the default settings of the desktop, for a better experience of the user unfamiliarized with the Linux CentOS7.

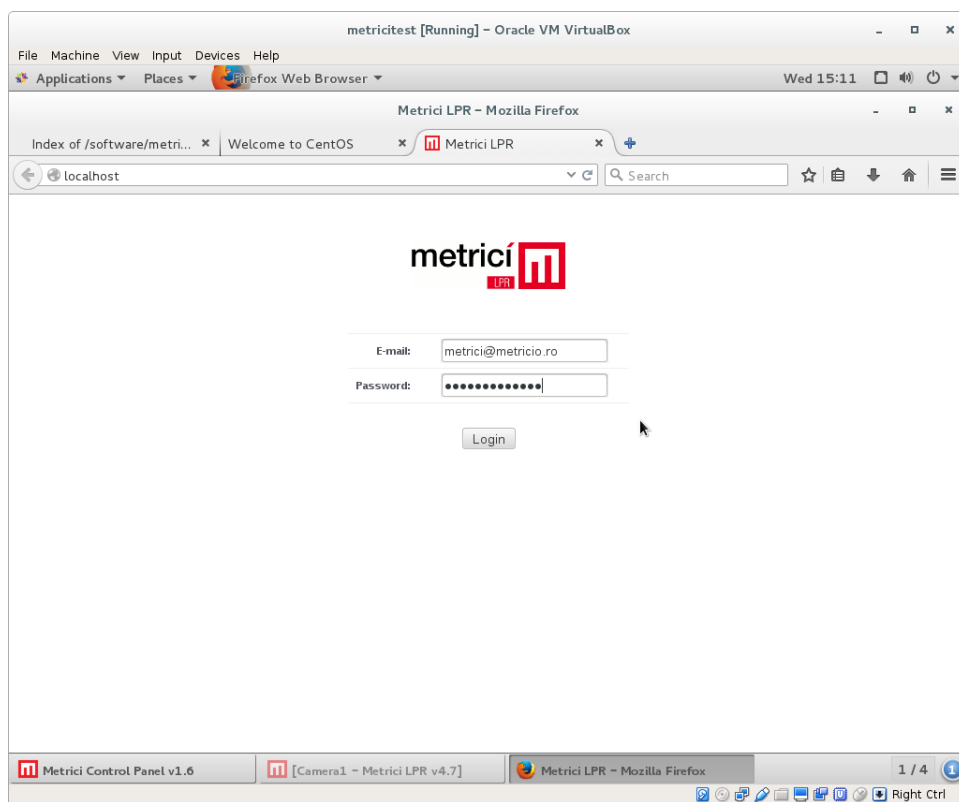
Thus, **Metrici LPR** activates automatic log in and creates a few shortcuts on desktop.

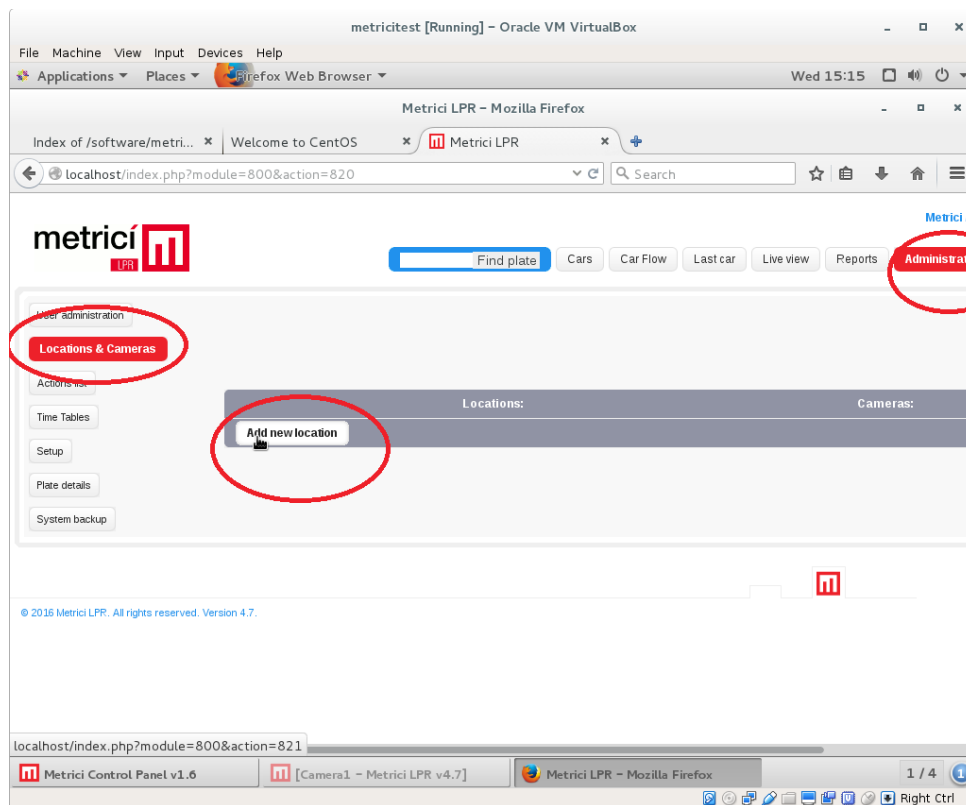
4.1 Initiating Metrici LPR Web Interface

Metrici LPR Web Interface created a shortcut on desktop, and this will facilitate the access to the reporting interface, where one can see the recognized license plates and so many other statistics.

Metrici LPR Web Interface is the ADMINISTRATION and REPORTING block for the data from the video cameras, as explained in the introduction of this manual. There you can find and group the statistics, you manage reports, set multiple users and commands to be executed for license plates on databases. This interface allows setting up multiple locations, which in their turn can include more detection cameras. It is necessary to define minimum a location and a camera.

Launch the program from the **Metrici LPR Web Interface** shortcut. You log in the system using the following: **e-mail: metrici@metrici.ro** and password: **metriciadmin**. Please change this password after login.





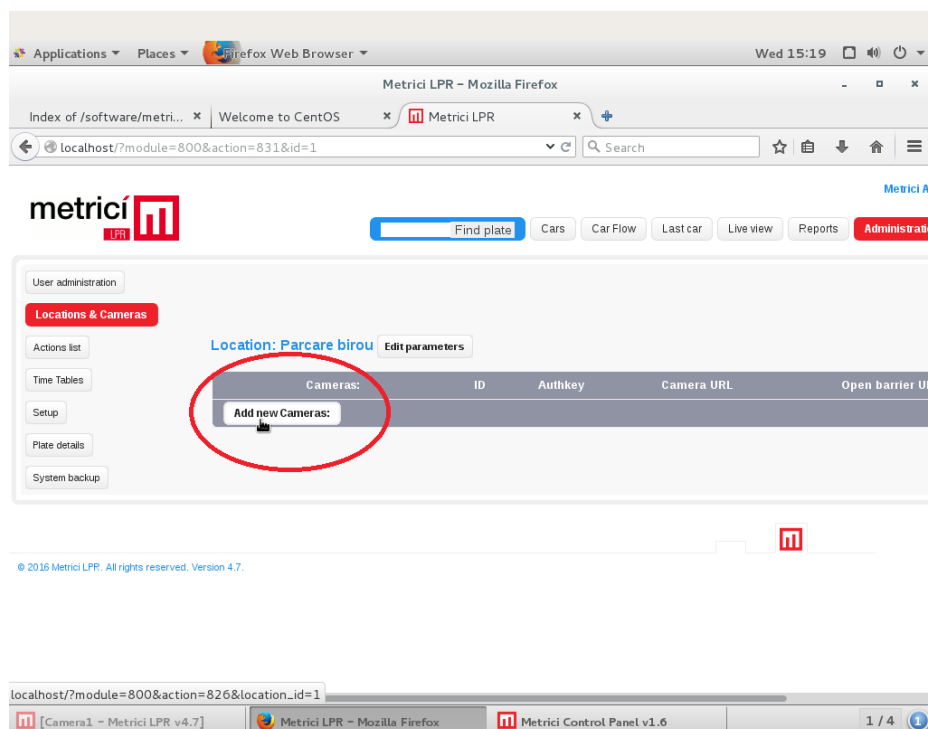
Access the menu

Administration, sub menu

Locations & Cameras and

click

Add new location button



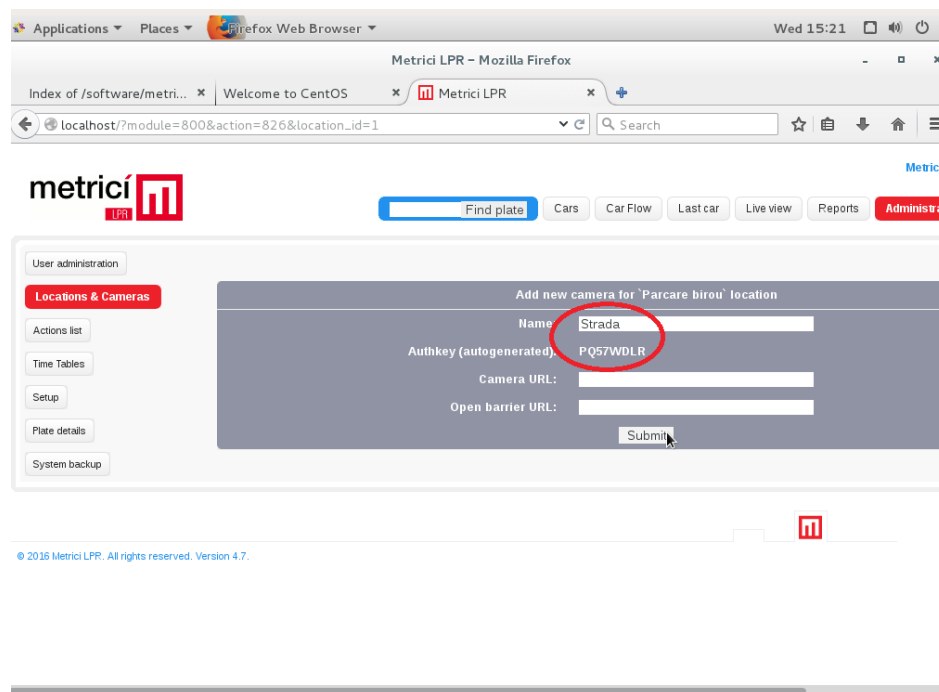
Choose a name for the location,

option **Submit**, and click on its

name to define a camera or

more by pressing **Add new**

cameras button



The system will generate an authentication key– **Authkey** that will facilitate the communication process between detection application and this **Metrici LPR** interface. Remember this authkey value because it will be filled in Metrici LPR Control Panel to have access to live view functions in this interface and create a database here. **See chapter 5.6**

The new location will be assigned to the default user.

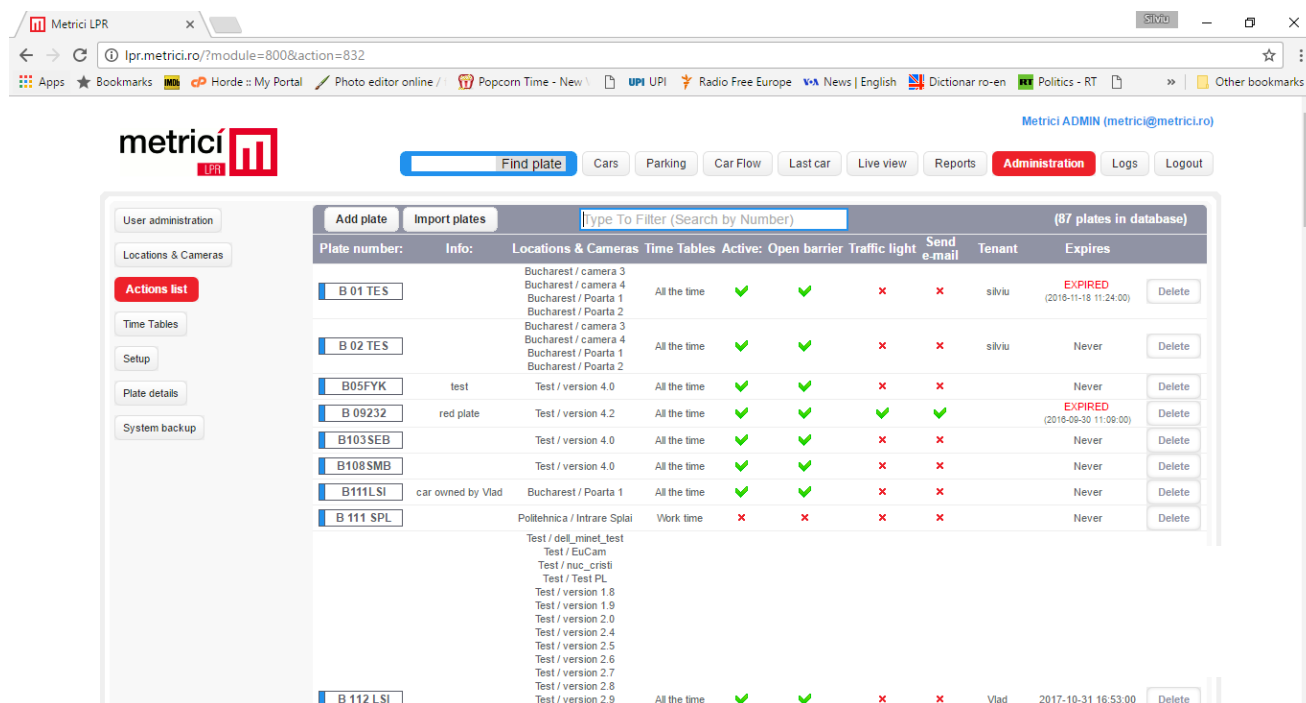
IMPORTANT

If a camera was connected and began recording events and saved them on the interface, that particular camera can no longer be deleted from the menu. This is a security feature for the users to not be able to delete events.

NOTE

In case you want a user to no longer have access to a location, you choose **Settings** menu, **user administration** tab and you will uncheck those particular locations you don't want anymore the user to have access to.

4.2 Actions List



The screenshot shows the Metrici LPR web application interface. The 'Actions list' tab is selected, displaying a table of license plates. The table has columns for Plate number, Info, Locations & Cameras, Time Tables, Active status, Open barrier, Traffic light, Send e-mail, Tenant, Expires, and a Delete button. The table contains 12 rows of data, including plates like B 01 TES, B 02 TES, B05FYK, B 09232, B103SEB, B108SMB, B111LSI, B 111 SPL, and B 112 LSI. The 'Expires' column shows various dates and times, with some plates marked as 'EXPIRED'.

The user can set preferences for one or more cars. These can manually be introduced in the system or you can import a list in format .txt or CSV.

When a license plate from the action list is detected, the program can execute one or more actions, such as: can open a barrier, change a traffic light, send an e-mail to a certain address chosen by the user, or it can generate a popup on screen. Also, the user can choose what is the time interval in which these actions to be active, according to the Time Tables.

When adding new license plates to Action List, you can choose, for example, that all cars that contain a certain combination of letters/numbers to be included in the same action.

You must remember that the character “_” replaces only one letter or number, where “%” replaces unlimited number of characters or even none.

If you wish that cars that have license plates beginning with letter B to have unrestricted access at the barrier, you will write a formula as B__%. This means that cars with license plate numbers that begin with letter B followed by at least other two characters will have unlimited access. Any license plate introduced in the Action List can be linked to a group, such as to adopt all the settings and rights for that particular group.

For details, check also **Chapter 6.1 Find plate**.

4.3 Action List Groups

In Administration – Action list groups, one can create as many groups as it wants. For every group, you need to choose a name, the locations and the cameras where this particular group is active. Also, you may choose the timetables in which this group activates, whether is active or not, what action the program to execute when a member of this group is detected: open barrier, command a traffic light, send an email, show pop-up. At Action URL, you need to fill the address of the hardware it needs to command: barrier, traffic light, display etc.

When new license plates are introduced in database and in action lists you don't need to fill all the data. You may choose a group to belong to and this license plate will automatically adopt all the characteristics of the group. For example: one can have a group for employee, another one for management, guests etc. The Groups can be used when introducing a new license plates in Action List or when introducing new phone numbers in Action List SMS.

4.4 Action List SMS

Administration – Action list SMS. The user with administration rights may introduce phone numbers in this list for them to grant access in a parking for specific license plates.

The owner of the phone numbers in this list may send a SMS text with a license plate, such as B01MET for example, to a phone number connected to Metrici. On **Hours till expire** tab, the administrator can establish for how long the license plate introduced by

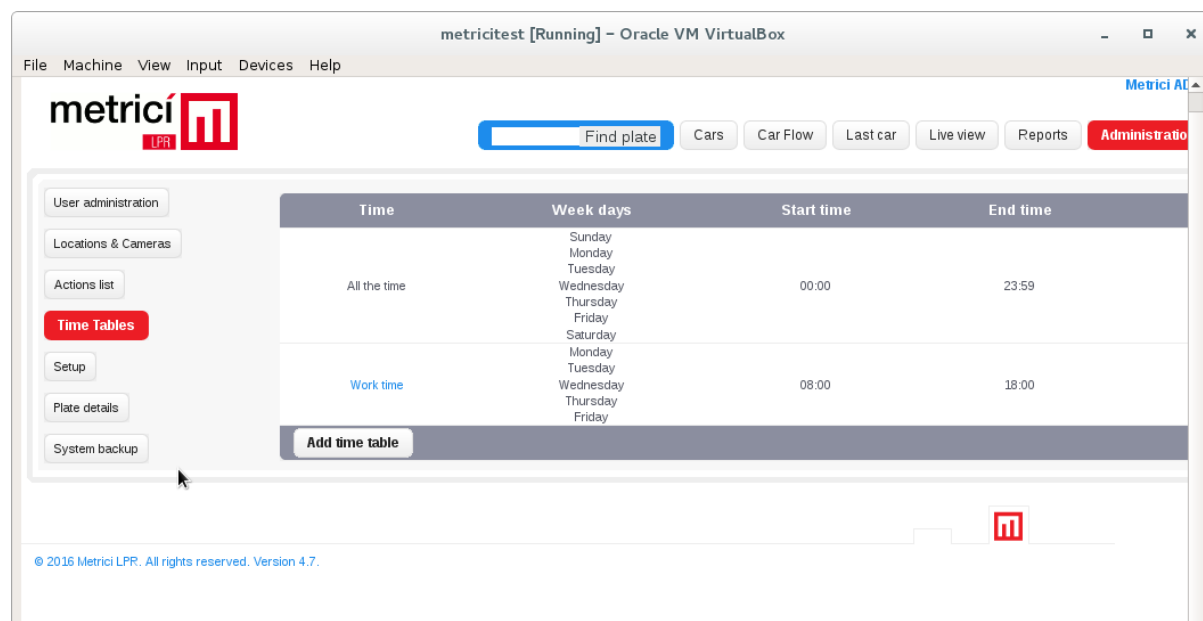
SMS has access in the parking, after a SMS was received. If this is left empty, the license plate has unlimited access. The phone number in this list will be introduced in the international format, with the country code, without the “+” character: e.g: 40722222222 or 3901432432.

The phone number in this list is connected to a group. In such a way, you don't need to change all the settings and modify parameters for every user/client/tenant, which has the right to send license plates and introduce them in the Action List.

Attention!

!!!Only phone numbers introduced in this list can grant access with a SMS to other license plates.

4.5 Time Tables



The detection software is operational 24/7, but a user can set time tables for different actions: for example, in which days or between what hours to open a barrier or to change a traffic light. Outside that time table, the program will go on to recognize the

number from the action list, but will no longer grant access except according to the time table.

4.6 Administration Setup

Administration menu, **Setup** submenu will allow changing some operational parameters of **Metrici LPR Web Interface**, such as the name, the way it displays information or you can choose in what module to work on: this is where you enter the Parking menu (see the detailed Parking manual) or Toll Station menu.

CHAPTER 5 METRICI CONTROL PANEL SETTING AND USING

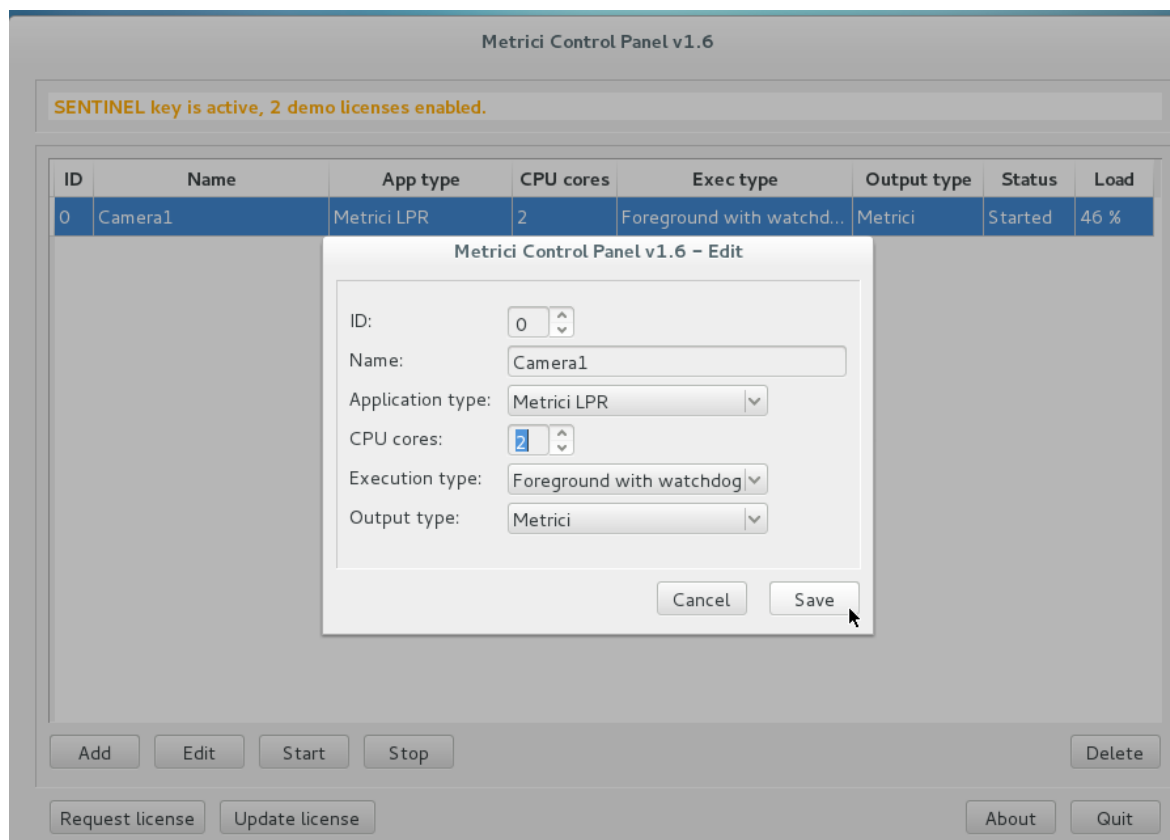
Metrici Control Panel application is in fact a unit for processing detection applications and data gathered by video cameras, as explained in the first pages of this guide

The data processed in this application will be send for recording, arrangement and reporting towards the **Metrici LPR Web Interface**, where they can be easily accessed. The detection application can work independently, but **Metrici Control Panel** makes sure that they are not jamming and are working as they are meant to do. Also, this is where you can set, change or later execute many useful options, as we are about to explain in this chapter

Metrici Control Panel application will launch automatically each time the computer is on.

You can add a new detection application by using the **Add** button. When adding a new application, you set the CPU and the number of **processing cores** for each camera. The more processing power for each camera, the better the detection, and the application will operate more frames in real time.

For example, an INTEL i5 processor has 4 CPU cores, so if you want to designate a 3 Mpixels camera and a 1 Mpixel one to this, we recommend using 3 CPU cores for the first one and 1 CPU for the second.



After adding a camera to a detection application, for a complete setup, such as connectivity , checking country syntax for recognized plate, actions to be executed, enter in **Execution type** in working mode **Foreground with watchdog**.

At a later date, this working mode can be changed. The four possible settings for the detection software are:

- **Background:** the application will operate without showing the results of the detection on screen, but will send the data to **Metrici LPR Web Interface**. This mode saves processing power.
- **Background with watchdog:** is the same way as Background, but the application will automatically restart in case of reboot or in case the computer is shut down
- **Foreground:** the application detection is visible. This mode is especially used when installing the system to check the position of the camera, settings etc.

- **Foreground with watchdog:** the same as Foreground, but the application will automatically restart when shut down,
 We recommend a working mode set at Background with watchdog.

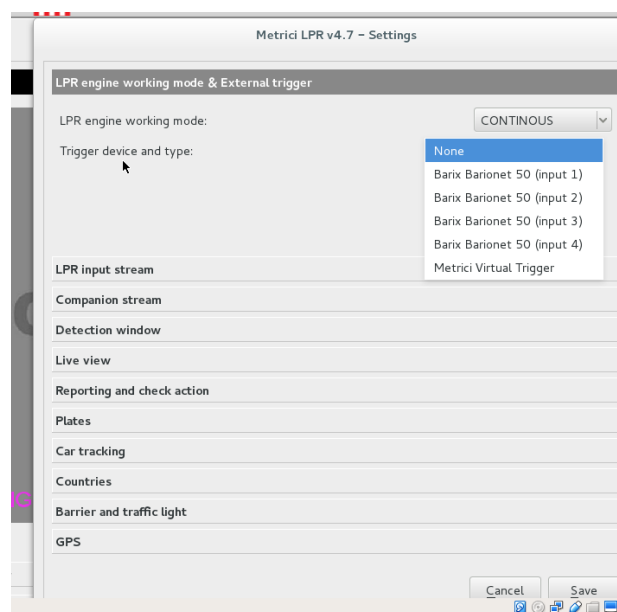
In case that more cameras will be connected to Control Panel, the settings in this chapter will be applied for each one of them.

5.1 LPR engine working mode & External trigger

By pressing the **Settings** button, the first option is **LPR engine working mode & External trigger** which will set the working mode for the detection software

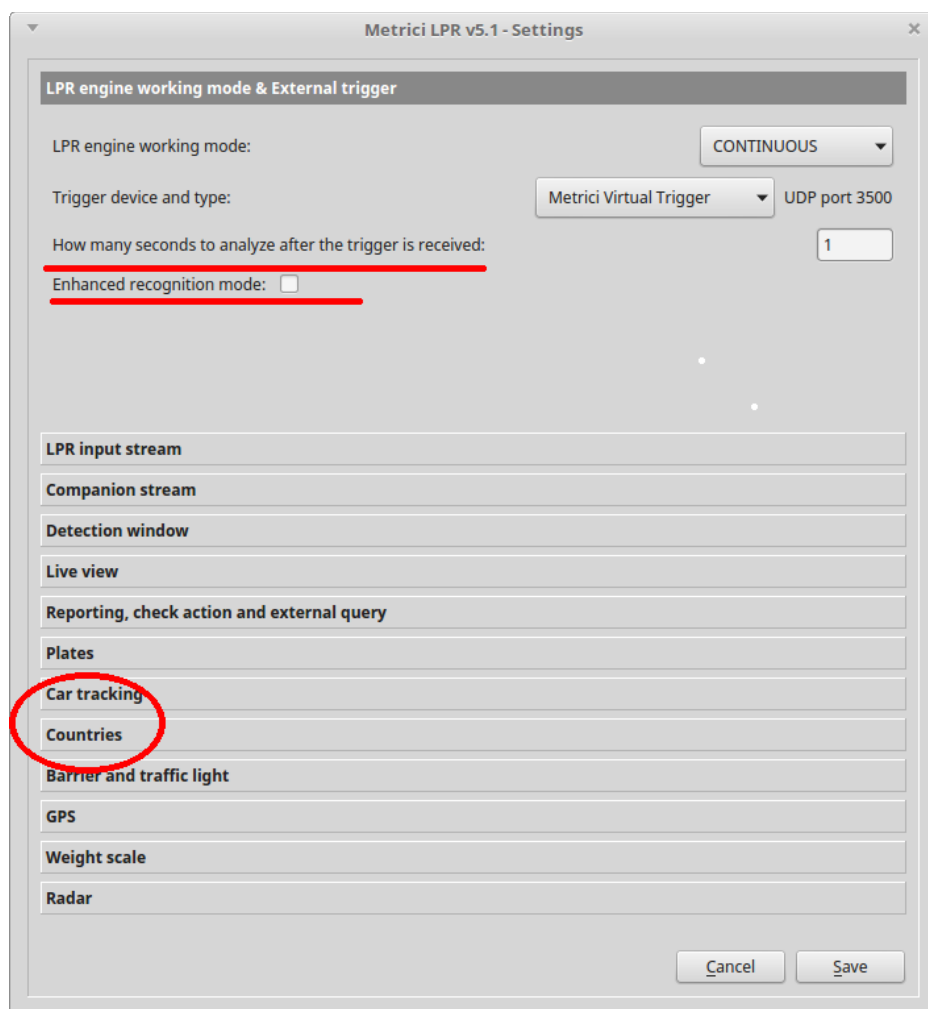
Metrici LPR can be active in continuous mode and try to detect numbers around the clock or if it receives a command from a compatible device, such as Barix Barionet, connected to an inductive loop.

Also, Metrici Virtual Trigger can be used when IP cameras or other IP devices have a digital input that can be triggered by an inductive loop, for example, and thus generating an event for **Metrici LPR** server.



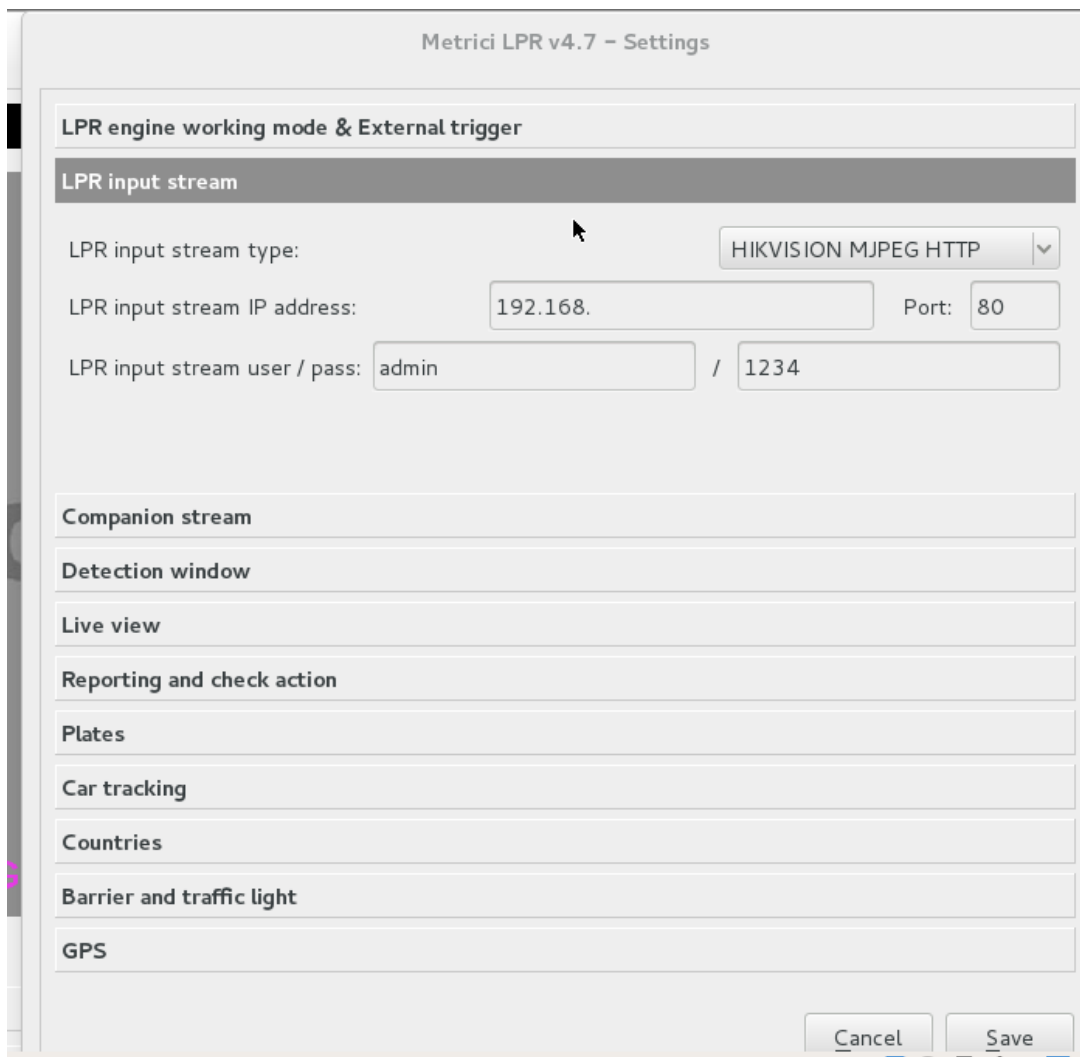
Keep in mind that when setting the detection with trigger you can also choose how many seconds the LPR engines is trying to detect a number plate. See next image. In case there is no number plate or this is not visible, dirty, partial etc., Metrici LPR engine will generate an event and will be added to database with the ID UNKNOWN. This will be accompanied by a still frame that you can check and see if there was a vehicle or not.

Also in this setting you can choose to enable an Enhanced recognition mode. What this will do is increase the accuracy, but will delay the response. In fact the system will check the characters from number plates, individual- letter by letter, against the fonts for each country set in the Countries tab. The more countries there are, the more will last to have an answer so Metrici advice is to be cautious with setting and not to use unless absolutely mandatory, as Metrici is probably the most accurate ANPR software on the market even without this option enabled.



5.2 LPR Input Stream

Section **LPR Input stream** will be filled with connectivity data of the camera: camera's IP, as well as the user and password as they were established when installing the camera.



The screenshot shows the 'Metrici LPR v4.7 - Settings' window. The 'LPR input stream' section is highlighted. It contains the following fields:

- LPR engine working mode & External trigger** (header)
- LPR input stream** (section header)
- LPR input stream type:** HIKVISION MJPEG HTTP (dropdown menu)
- LPR input stream IP address:** 192.168. (text input)
- Port:** 80 (text input)
- LPR input stream user / pass:** admin / 1234 (text input)
- Companion stream** (header)
- Detection window** (header)
- Live view** (header)
- Reporting and check action** (header)
- Plates** (header)
- Car tracking** (header)
- Countries** (header)
- Barrier and traffic light** (header)
- GPS** (header)
- Cancel** and **Save** buttons at the bottom right.

5.3 Companion Stream

Companion Stream This option allows the user to set a new camera that will record an image along the one that captures the license plate. The images from the two cameras

will be saved together on web interface. You will fill the IP of the camera, the user and the password.

Companion Stream Type: Choose the model of the second camera. In case this model is not on the list, choose Generic camera and the video format it uses.

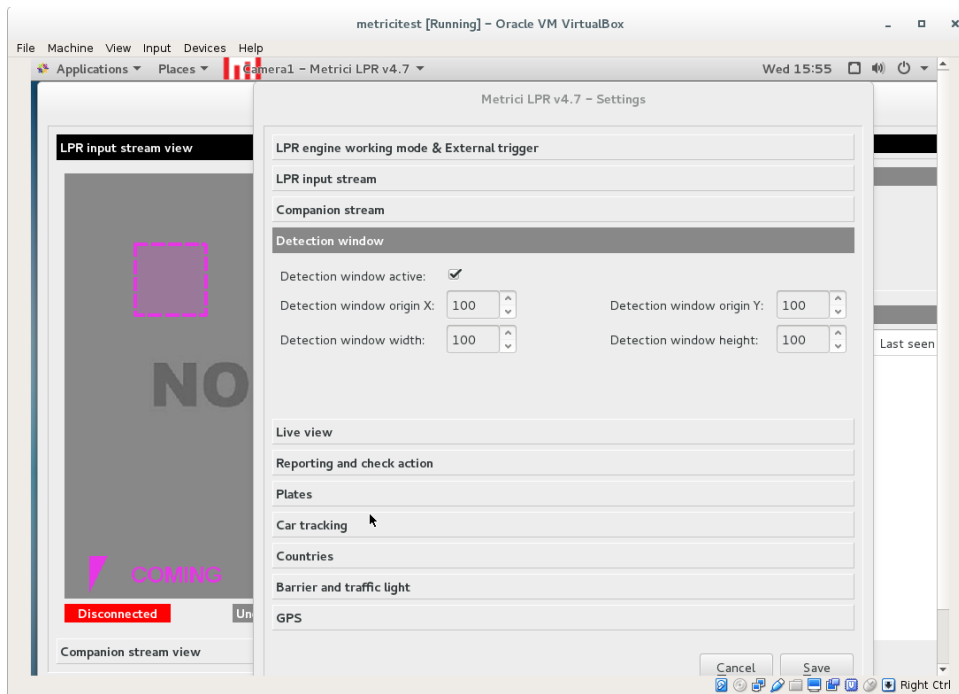
Companion Stream IP address is the IP address of the second camera as was set when installed

Companion stream user /pass – user and password of the camera as were set when installed.

5.4 Detection Window

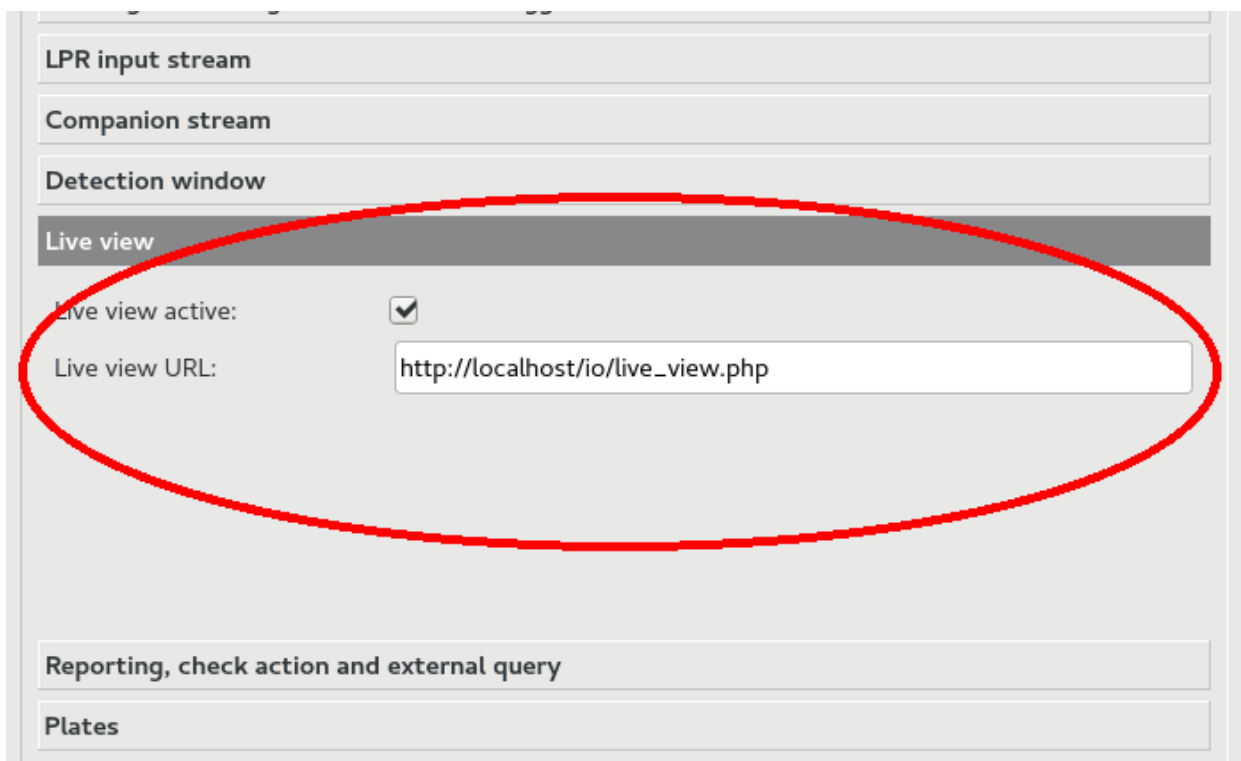
Detection window tab, when checked, will reduce the area scanned for a license plate. This will allow a greater speed of detection, and a smaller need of resources for saving and recording and faster processing. This option can be used for barriers, or in other areas where license plates can only be seen in a space smaller than the entire view field of the camera.

By changing the values from this function, you can modify the zone where the detection soft to look for plates. Detection window can also manually be set, with “click and drag” from the corners of the pink square.



5.5 Live view

Live view. By checking this button, image from detection camera will be broadcasts to the web interface or an IP address.



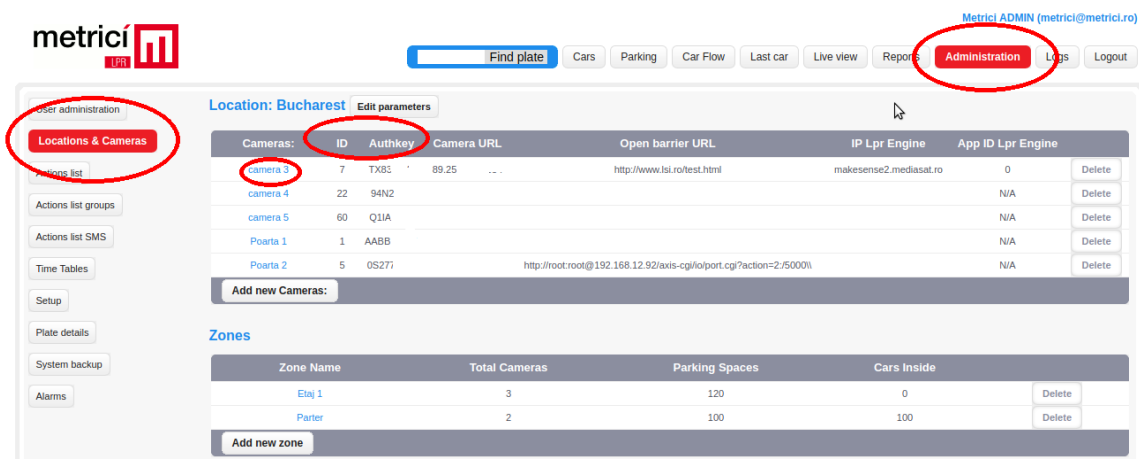
The screenshot shows a web interface with several sections: 'LPR input stream', 'Companion stream', 'Detection window', 'Live view', 'Reporting, check action and external query', and 'Plates'. The 'Live view' section is highlighted with a red oval. It contains a checkbox labeled 'Live view active:' which is checked, and a text field labeled 'Live view URL:' containing the value 'http://localhost/io/live_view.php'.

In order to have access to live view functions in web interface you click on Live view active and fill in the data for url. If the access is only on localhost you will write an URL such as http://localhost/io/live_view.php. If the access is web based you will write an address such as http://IP_ADDRESS/io/live_view.php and result a formula like http://192.1.1.1/io/live_view.php

5.6 Reporting, check action and external query

In the menu **Reporting and check action** you will fill in the data from Reporting/ Check action-**authkey** / **id**, generated by **Metrici LPR Web Interface**. These values were set automatically by **Metrici LPR Web Interface** when a camera was introduced in the system. This is the only way in which you integrate the communication between the detection unit and analysis centre. If you will not fill these data, you will not have access to Live View and Car Flow functions in Web Interface, it will not build a database and it will not create reports and statistics.

NOTE: These data can be accessed in **Metrici LPR Web Interface** on **Administration menu, Location&Cameras** submenu . As in the next image.



The screenshot shows the Metrici LPR Web Interface. The top navigation bar includes 'Find plate', 'Cars', 'Parking', 'Car Flow', 'Last car', 'Live view', 'Reports', 'Administration' (highlighted with a red circle), 'Logs', and 'Logout'. The left sidebar contains 'User administration', 'Locations & Cameras' (highlighted with a red circle), 'Actions list', 'Actions list groups', 'Actions list SMS', 'Time Tables', 'Setup', 'Plate details', 'System backup', and 'Alarms'. The main content area is titled 'Location: Bucharest' and 'Edit parameters'. It features a table of cameras with columns: 'Cameras', 'ID', 'Authkey', 'Camera URL', 'Open barrier URL', 'IP Lpr Engine', and 'App ID Lpr Engine'. The 'ID' and 'Authkey' columns are highlighted with red circles. Below the camera table is a section for 'Zones' with columns: 'Zone Name', 'Total Cameras', 'Parking Spaces', and 'Cars Inside'. The 'Add new Cameras' and 'Add new zone' buttons are visible at the bottom of their respective sections.

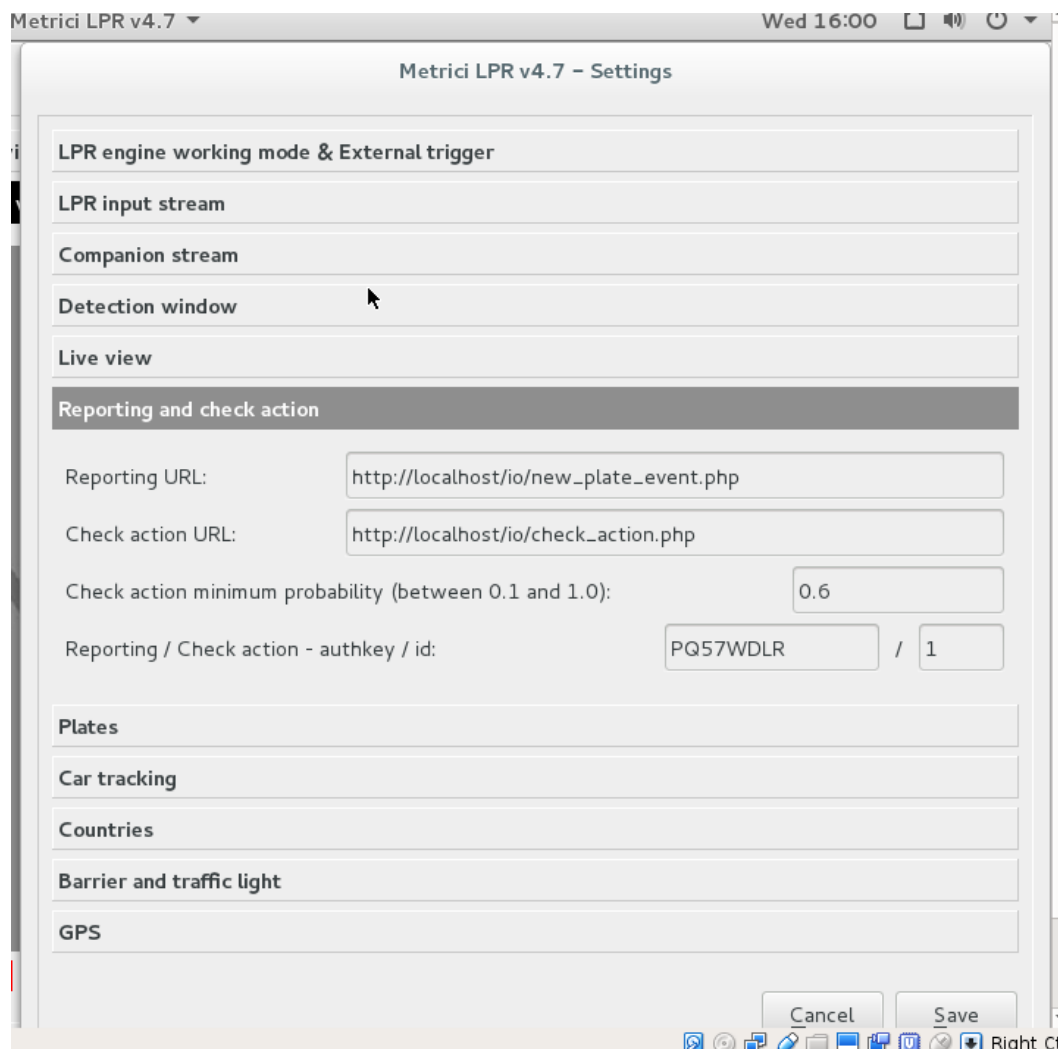
Cameras	ID	Authkey	Camera URL	Open barrier URL	IP Lpr Engine	App ID Lpr Engine	
camera 3	7	TX83	89.25	http://www.lsi.ro/test.html	makesense2.mediasat.ro	0	Delete
camera 4	22	94N2			N/A		Delete
camera 5	60	Q1IA			N/A		Delete
Poarta 1	1	AABB			N/A		Delete
Poarta 2	5	0S271		http://root:root@192.168.12.92/axis-cgi/olport.cgi?action=2/5000%	N/A		Delete

Zone Name	Total Cameras	Parking Spaces	Cars Inside	
Etaj 1	3	120	0	Delete
Parter	2	100	100	Delete

Reporting URL – the virtual address where the system will send the data of recognized license plates and the images from the cameras. This will be as http://IP_ADDRESS/io/new_plate_event.php. In case that reporting and administration interface is installed on same computer with the analysis application, IP_ADDRESS will take the form 127.0.0.1

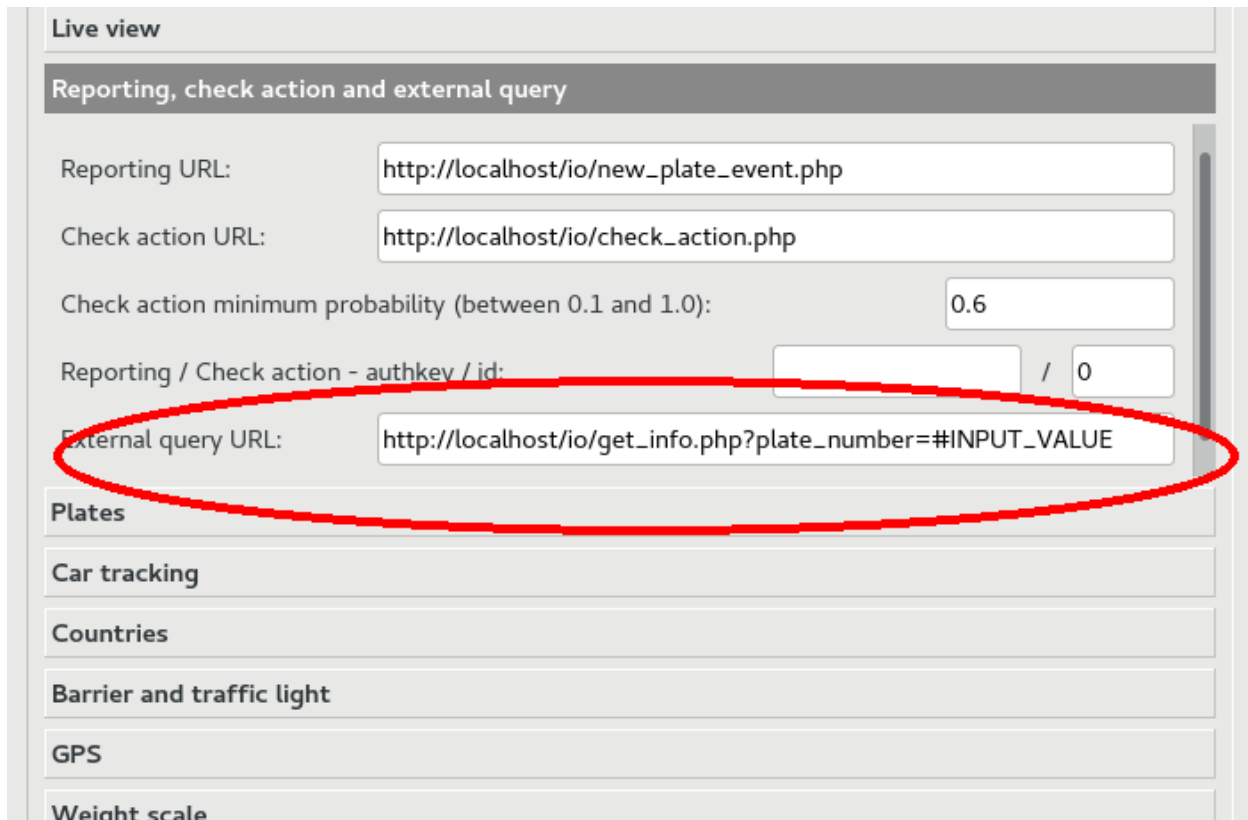
Check action URL – the address of the unit for checking the actions to be executed if a license plate is recognized. The actions can be set in **Metrici LPR Web Interface** and take a form such as: open barrier, send e-mail, popup on screen, change traffic light. It is something like: http://IP_ADDRESS/io/check_action.php. In case that reporting and administration interface is installed on same computer with the analysis application, IP_ADDRESS will be 127.0.0.1

Check action minimum probability between 0.1 and 1.0 tells the system which is the minimum value at which a license plate is checked for possible actions in database. We recommend a value of 0.6



External Query

In order to communicate with an external system or database directly from the detection engine, the external query function is used. In this case the user is expecting an answer about a plate number from an external part. By default, this is activated to communicate with a local IP, but it can be set according to preferences. Also, the external query can take many forms, with the # sign followed by the name of the field from external database from which the system is expecting an answer, as in the next image.



Live view

Reporting, check action and external query

Reporting URL:

Check action URL:

Check action minimum probability (between 0.1 and 1.0):

Reporting / Check action - authkey / id: /

External query URL:

Plates

Car tracking

Countries

Barrier and traffic light

GPS

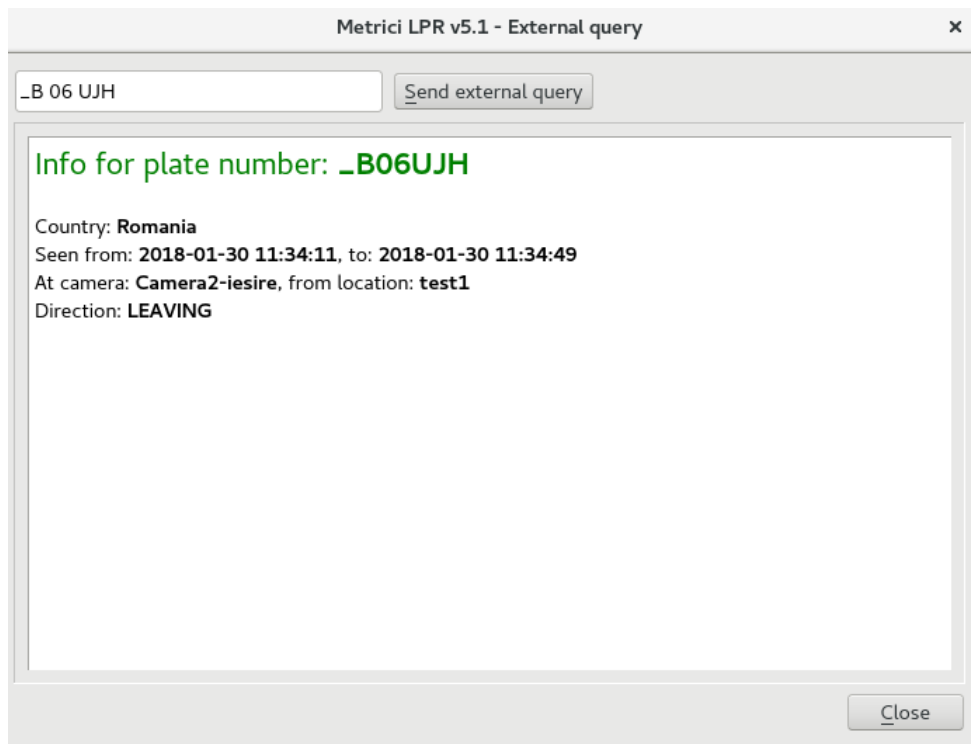
Weight scale

In this case, the question is formed to localhost, but it can be sent to an external IP. If such, External Query URL will have a form such as

192.137.1.1/io/get_info.php?plate_number=#INPUT_VALUE

where Input Value is the name of the field from which an answer is expected. This can be for example #DIRECTION, #TIME_OF_DETECTION, or any other info such as #OWNER, #VALABILITY, #TIME_OF_ISSUE.

Depending on what type of question you ask the external system you will get an answer such as in the next image.



5.7 Plates

For **Plates** tab, the optimum value of **Plate min. length** and **Plate max. length** will be set only after placing the camera and choosing an appropriate resolution, depending on results. You can start with a Plate min. length = 120 and Plate max. length = 1000.

The option **Same plate delay (seconds)** will set how many seconds the program to wait for a license plate to be back in sight for reporting a new detection. For example, if we set this value at 5 seconds, the software will record a new event for a license plate if it gets more than 5 seconds between the time when a license plate exits the camera view and a new entry in the view field.

Single plate mode button, when activated, it assumes there is only one license plate in frame, any given moment. This mode will reduce the number of “false positive” detections in case a car stays for a longer period of time in the same position.

5.8 Car tracking

Car tracking will establish the direction of movement for the cars. The data from this option can later be accessed in the **Metrici LPR Web Interface**

5.9 Countries

From the list of available countries, one can choose the ones from which the license plates to be recognized. In case only a few states are selected, license plates from other countries, not on this list, will be ignored by the detection engine and **will not be saved** in reports, lists or images.

In case “catch all” option is checked, the bigger the risk of recording “false positives”, but all the possible license plates will be scanned. For example, it is possible to have saved in database entries with “Taxi” box or identification numbers of buses, other noise in the image.

IMPORTANT!

For a greater speed and an accurate recognition we recommend choosing only a few countries and the **first position on the list to be the one where the system is installed.**

5.10 Barrier and traffic light

Will set the parameters for closing and opening a barrier when a license plate is recognized.

You will fill in the URL address of the device.

Instead of a barrier it can be any device that takes commands by HTTP protocol.

Delay before closing barrier will set the time interval, in seconds, the system waits before closing the barrier after it opened it for a recognized license plate.

Traffic light ON URL will be filled in case a traffic light is installed, which will commute when a license plate is detected if this option is checked for that particular number in Action list.

All the settings from **Barrier and traffic light** menu will be correlated with the **Metrici LPR Web Interface** menu for each license plate that is in action list.

5.11 GPS

In case you will set a GPS device, this will save the data together with the image from the cameras.

5.12 Weight Scale

When integrating a IP weight scale, an IP address will be saved in the dedicated box. Each detected license plate will be recorded in database together with the weight of the vehicle. TCP Port can be changed manually accordingly to the data on set.

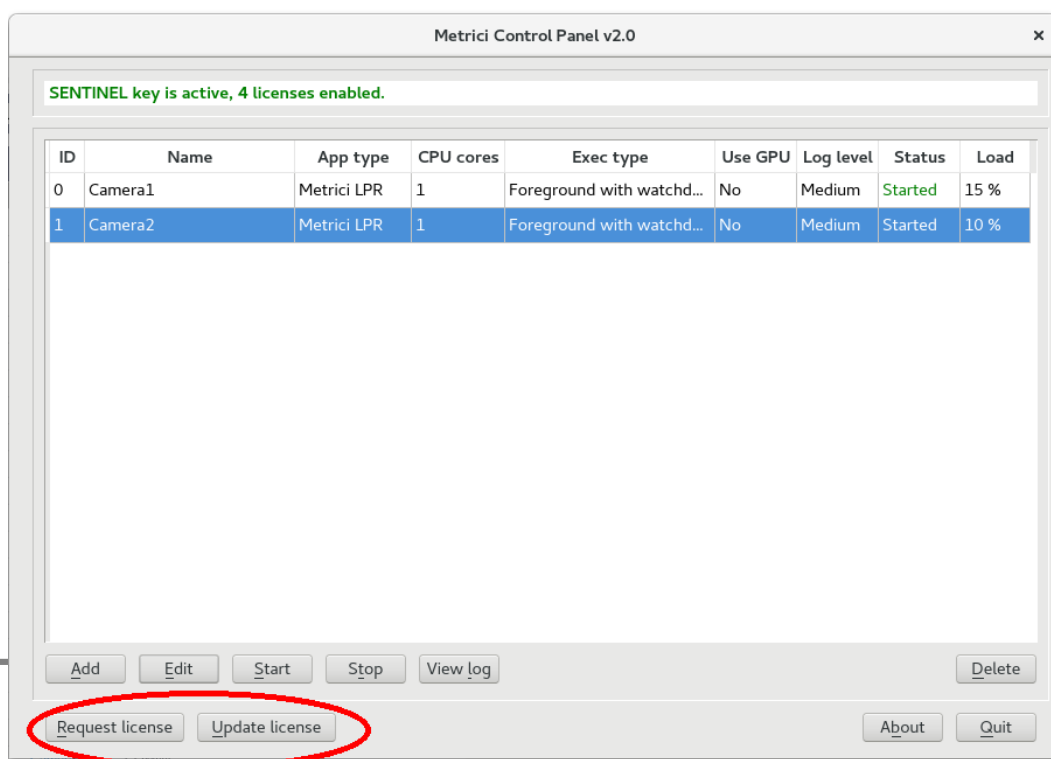
5.13 Radar

When Metrici Observer Radar is connected, after filling the required data (IP address and TCP Port), the image of the license plate detected by Metrici will be saved together with the recorded speed of the vehicle. TCP Port can be changed and manually saved, depending on Barix settings on location.

NOTE: The detection system **Metrici Control Panel** can work independently of internet connection, records the data in a local buffer and will later save the information on server and on **Metrici LPR Web Interface**, when a connection at internet /network is set.

5.14 Licence activation

After you've done all the settings in Metrici Control Panel you may want to activate your license. In Metrici Control Panel, click on Request license. In the new window fill in the product key that is written on the license certificate received from Metrici. Press OK



This will generate a c2v file that will be saved on computer, usually on desktop.

Go to <http://support.metrici.ro/activate/> . In the designated fields write a valid e-mail address to which you have access and a phone number. Load the previously generated c2v file by pressing “Load the license request file”. In the end press “Request activation”.

It is important that you have access to the mail you provided because you will receive there the info for activation.

In a two hour interval you will receive a mail answer from metrici such as

Activation license for LPR Metrici

Hello, you can download activation file at:

<http://support.metrici.ro/activate/keys/8457847584788928ks.v2c>

Product code: 7866869_df93mo398-4k12e9i-29038-a9879-876nmsu6487.

You will download the file from that link, save it on computer and click on “Update license” in Metrici Control Panel. There you will load this file from Metrici and Open.

CHAPTER 6


MANAGING STATISTICS AND REPORTS METRICI LPR WEB INTERFACE

Cars menu offers the means to see the list with the recognized license plates, with a probability bigger or equal to the one predefined (**see Chapter 6.6**). You can also make a search by date, country code, location or camera. The system will display only the locations and cameras for which the user has access.

For each of the license plates, the system will display the alphanumeric content, country code, the moment when the plate was recognized, location, camera and the direction (**see Chapter Car tracking**), the time interval between two detections with opposite directions.

On the right side the system will display the reconstructed number and the processed picture of the plate. Underneath, you will see car's picture and a few quick links for reports and actions.

If you click on cars picture or on plate, you can see them at the original size, as they were taken by the camera.

metrici 

Metici ADMIN (metici@metrici.ro)


Find plate Cars Car Flow Last car Live view Reports Administration Logs Logout

Filter: Date: 2016-11-03 Calendar Country: ALL Location: ALL Camera: ALL

Plate	Country	Time	Location	Camera	Direction	Time inside	Action	Info
B 777 WZY	RO	12:22:06	Bucharest	camera 3	LEAVING	-	-	-
B 220 FOX	RO	12:21:10	Bucharest	camera 3	LEAVING	-	-	-
B 167 LEV	RO	12:20:04	Bucharest	camera 3	COMING	-	-	-
B 164 LEV	RO	12:20:04	Bucharest	camera 3	LEAVING	-	-	-
B 167 LEV	RO	12:19:45	Bucharest	camera 3	LEAVING	-	-	-
B 161 LEV	RO	12:19:42	Bucharest	camera 3	COMING	-	-	-
B 43 RPO	RO	12:17:15	Bucharest	camera 3	LEAVING	-	-	-
B 39 SXW	RO	12:16:31	Bucharest	camera 3	LEAVING	-	-	-
B 09 GRE	RO	12:14:03	Bucharest	camera 3	LEAVING	-	-	-
B 09 GRE	RO	12:13:13	Bucharest	camera 3	LEAVING	0d 00:01:43	-	-
B 61 JAO	RO	12:12:01	Bucharest	camera 3	LEAVING	-	-	-
B 696 GTM	RO	12:11:48	Bucharest	camera 3	LEAVING	-	-	-
B 09 GRE	RO	12:11:33	Bucharest	camera 3	COMING	-	-	-
B 60 YUZ	RO	12:11:15	Bucharest	camera 3	LEAVING	-	-	-
B 56 KBT	RO	12:10:10	Bucharest	camera 3	COMING	-	-	-
B 60 YUZ	RO	12:10:06	Bucharest	camera 3	LEAVING	17d 05:20:31	-	-
B 62 DKM	RO	12:09:00	Bucharest	camera 3	LEAVING	-	-	-
B 47 NBC	RO	12:07:56	Bucharest	camera 3	COMING	-	-	-
B 22 CPH	RO	12:06:46	Bucharest	camera 3	LEAVING	-	-	-
IF 12 UKA	RO	12:06:31	Bucharest	camera 3	LEAVING	-	-	-
IF 12 UKH	RO	12:05:15	Bucharest	camera 3	UNKNOWN	-	-	-
B 334 DVZ	RO	12:04:58	Bucharest	camera 3	COMING	-	-	-
BN 42 MAG	RO	12:02:07	Bucharest	camera 3	COMING	-	-	-
B 999 DDE	RO	12:00:49	Bucharest	camera 3	COMING	-	-	-
IF 12 UKA	RO	11:57:51	Bucharest	camera 3	LEAVING	-	-	-
B 89 BMA	RO	11:56:43	Bucharest	camera 3	LEAVING	-	-	-
B 041524	RO	11:54:35	Bucharest	camera 3	UNKNOWN	-	-	-

Plate number: B 777 WZY B 777WZY

Car image:



Events for B777WZY:

Today (1) This week (1) This month (1)

Options for B777WZY:

Add to Actions list Export PDF

Cars: 191, Unique cars: 137 Page: 1 2 3 4 >>>

6.1 Find plate

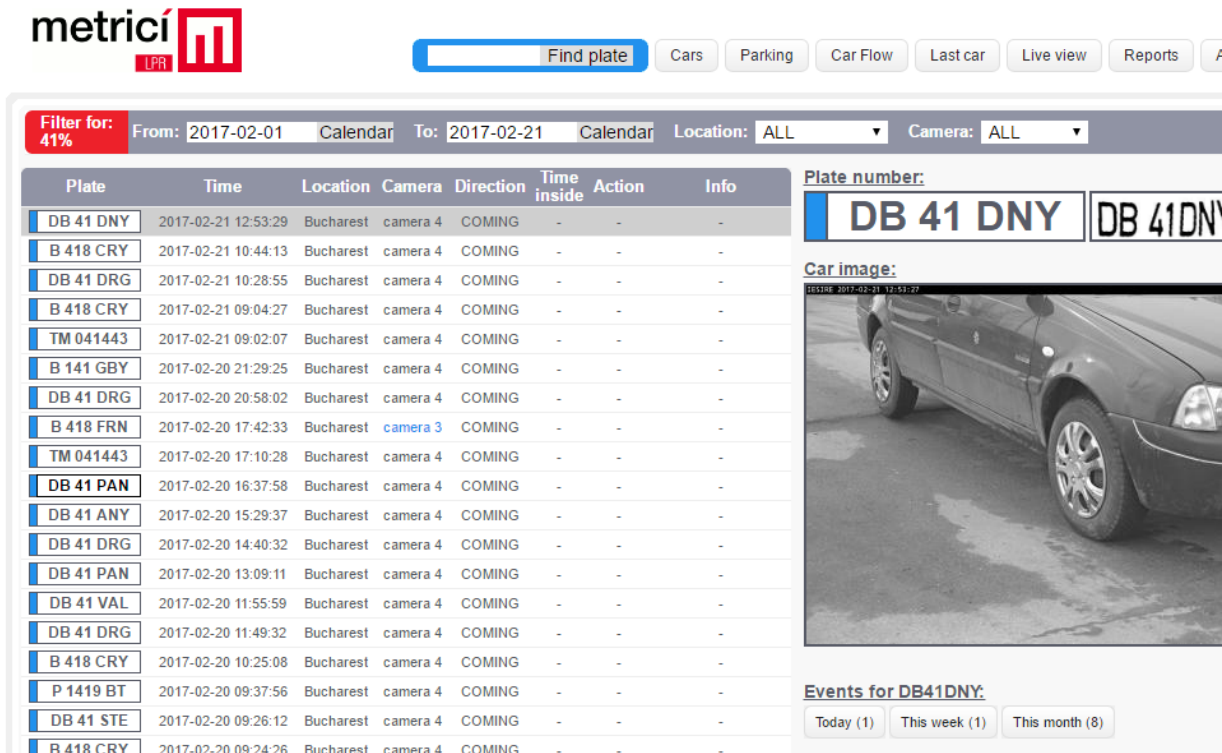
You can make a quick search of license plates by filling the blue box and pressing **Find plate** button. You can write only a part of the license plate and the system will display all the plates that respect that condition. For example a search for GL will generate results such as GL 17 VGN, but also B 100 GLA or TR 34 AGL.

For every new search the character “_” replaces one letter or one number. The character “%” will replace as many characters.

For example, a search as _B 01 will generate results starting with a group such as AB 01..., also SB 01... or DB 01..... A search like 41% will generate results as in the next image. “41” can be anywhere inside the license plate number.

Also, a search as GL__% will generate a list with all the license plates numbers that begin with GL, followed by at least two other characters, as “%” can also have a zero value.

Starting with version 5.1, a user can perform a search not only by date, but also according to groups and tenants, apart from selecting a location or a specific camera.




The screenshot shows the Metrici LPR 5.1 web interface. At the top, there's a navigation bar with the Metrici logo and a search bar labeled "Find plate". Below the search bar are buttons for "Cars", "Parking", "Car Flow", "Last car", "Live view", and "Reports". The main content area has a filter bar with "Filter for: 41%", "From: 2017-02-01", "To: 2017-02-21", "Location: ALL", and "Camera: ALL". Below the filter bar is a table of detected cars with columns: Plate, Time, Location, Camera, Direction, Time inside, Action, and Info. The table lists 20 cars, all with "COMING" action and "camera 4" location. To the right of the table, there's a "Plate number:" section showing "DB 41 DNY" and a "Car image:" section showing a black and white photo of a dark car. Below the car image, there's an "Events for DB41DNY:" section with buttons for "Today (1)", "This week (1)", and "This month (8)".

Plate	Time	Location	Camera	Direction	Time inside	Action	Info
DB 41 DNY	2017-02-21 12:53:29	Bucharest	camera 4	COMING	-	-	-
B 418 CRY	2017-02-21 10:44:13	Bucharest	camera 4	COMING	-	-	-
DB 41 DRG	2017-02-21 10:28:55	Bucharest	camera 4	COMING	-	-	-
B 418 CRY	2017-02-21 09:04:27	Bucharest	camera 4	COMING	-	-	-
TM 041443	2017-02-21 09:02:07	Bucharest	camera 4	COMING	-	-	-
B 141 GBY	2017-02-20 21:29:25	Bucharest	camera 4	COMING	-	-	-
DB 41 DRG	2017-02-20 20:58:02	Bucharest	camera 4	COMING	-	-	-
B 418 FRN	2017-02-20 17:42:33	Bucharest	camera 3	COMING	-	-	-
TM 041443	2017-02-20 17:10:28	Bucharest	camera 4	COMING	-	-	-
DB 41 PAN	2017-02-20 16:37:58	Bucharest	camera 4	COMING	-	-	-
DB 41 ANY	2017-02-20 15:29:37	Bucharest	camera 4	COMING	-	-	-
DB 41 DRG	2017-02-20 14:40:32	Bucharest	camera 4	COMING	-	-	-
DB 41 PAN	2017-02-20 13:09:11	Bucharest	camera 4	COMING	-	-	-
DB 41 VAL	2017-02-20 11:55:59	Bucharest	camera 4	COMING	-	-	-
DB 41 DRG	2017-02-20 11:49:32	Bucharest	camera 4	COMING	-	-	-
B 418 CRY	2017-02-20 10:25:08	Bucharest	camera 4	COMING	-	-	-
P 1419 BT	2017-02-20 09:37:56	Bucharest	camera 4	COMING	-	-	-
DB 41 STE	2017-02-20 09:26:12	Bucharest	camera 4	COMING	-	-	-
B 418 CRY	2017-02-20 09:24:26	Bucharest	camera 4	COMING	-	-	-

6.2 Reports. Cars each hour

One can see a few reports about the traffic by accessing **Reports** menu. **Cars each hour** report will show the number of cars and unique cars seen each hour of the day. You can choose the time interval for the report, as well as the type of report: SUM = hourly sum for the reporting interval, or AVERAGE = hourly average for the interval.

Another reports offered by Metrici are the number of cars each day on an interval chosen in days, months, or number of cars in comparison for selected cameras, also what are the cars seen more often in a time interval– **Top cars**.

metrici 

Metrici ADMIN (metrici@metrici.ro)

Find plate Cars Car Flow Last car Live view **Reports** Administration Logs Logout

Filter: From: 2016-11-01 Calendar To: 2016-11-03 Calendar Max. results: 20

Cars each hour
Cars each day
Cars each month
Cars each camera
Top cars

Plate number:	Country:	Total events:	Today events:	This week events:	This month events:	Actions list:
B 30 HUZ	RO	35	0	35	35	Add
B 56 LNC	RO	29	0	29	29	Add
B 77 BPS	RO	28	0	28	28	Add
B 74 EFW	RO	25	0	25	25	Add
B 225 BPS	RO	25	0	25	25	Add
BZ 43 RVR	RO	19	0	19	19	Add
IL 02 VNC	RO	18	0	18	18	Add
B 281 BLO	RO	11	0	11	11	Add
B 56 UVB	RO	11	0	11	11	Add
B 52 WRB	RO	10	0	10	10	Add
B 13 ZMZ	RO	9	0	9	9	Add
B 32 WKP	RO	9	0	9	9	Add
B 041524	RO	8	8	8	8	Add
B 777 NEK	RO	7	0	7	7	Add
B 75 SLW	RO	7	0	7	7	Add
B 43 RPO	RO	6	6	6	6	Add
B 500 OIT	RO	6	0	6	6	Add
CL 10 YMB	RO	6	1	6	6	Add
B 56 JNH	RO	5	0	7	5	Add
B 45 RRT	RO	5	0	5	5	Add

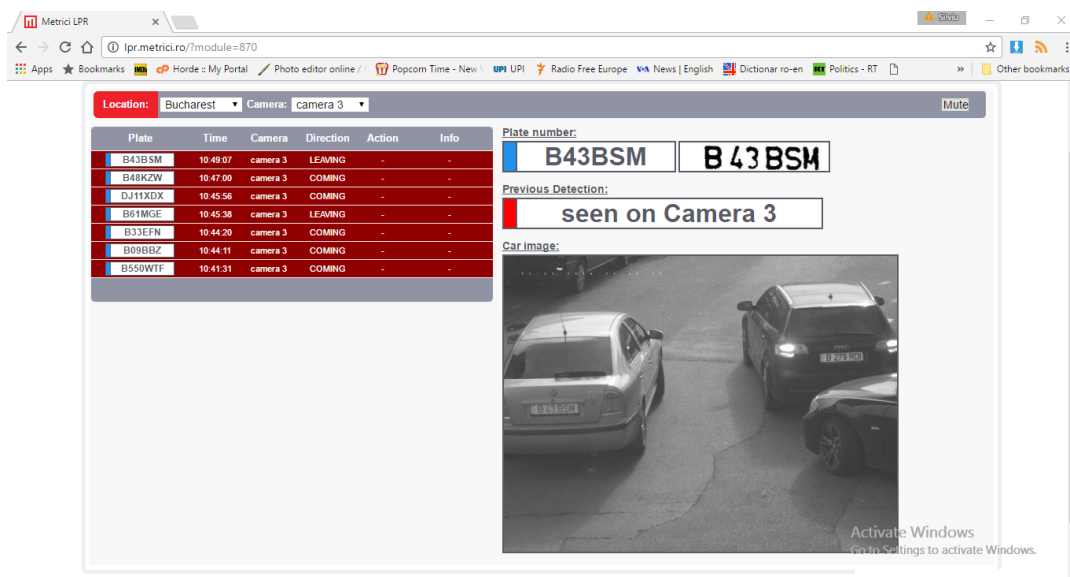
© 2016 Metrici LPR. All rights reserved. Version 4.7.

6.3 Car flow

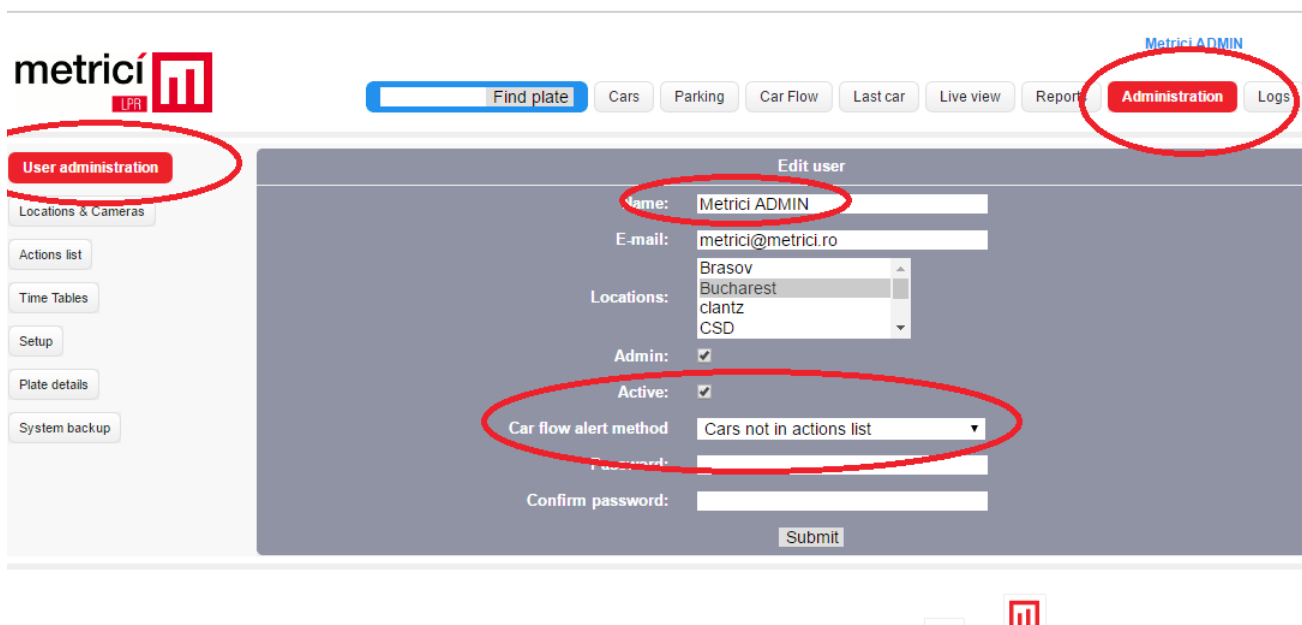
This menu will generate a live list with the cars that are detected by Metrici LPR. Depending on the alert method chosen by the user: “cars in the action list” or “cars not in the action list”, a beep will accompany each detection.

On the left side, you can see the license plate, the hour of the detection, camera which did it, the direction of movement and the action to be executed if the car is in the action list.

On the right side the photo of the car is displayed, along the plates reconstructed

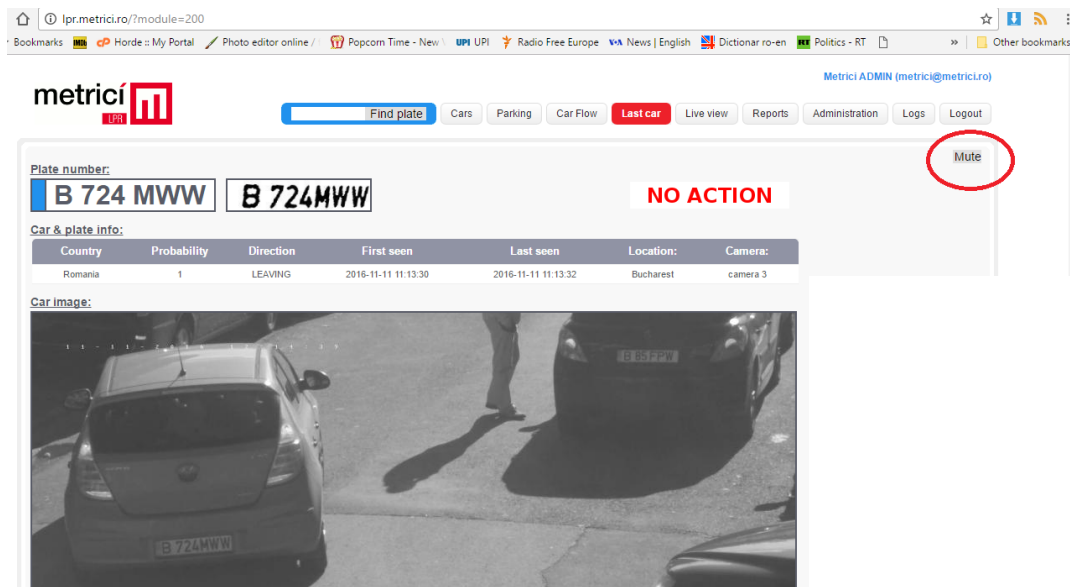


NOTE The type of alert for each user is selected in the **Administration** menu, **User Administration** submenu. From the list of user, click on the wanted one and a dialogue window will open. “Car flow alert method” tab let you chose what type of alert you prefer.1



6.4 Last car

This menu will show the photo of the last detected car, together with some info: the date, location, camera, and action list setting. That image will change with a new detection.



NOTE: Car Flow menu and Last car have a button to Mute the sound.

RECOMMENDATIONS

For a better detection rate and recognition of license plates, we recommend

- Place IP camera, choose a video stream resolution and a frame rate so every license plate to be in at least two frames and its size to be at minimum 200 pixels. The horizontal axes angle must not surpass +/- 20 de grade.
- Use infrared lightning daytime and night time, together with an optic filter low-pass for video cameras.

- Use a IR light with and illumination angle similar to the camera view field
- Don't put the IR light at a distance bigger than 30 cm from IP camera. The best position is right below the camera.
- Set the camera so that the shutter time to be correlated with the speed of moving vehicles (e.g.: 1/1000 s for speed up to 60~70 km/h).
- Choose a video camera with a bigger sensitivity and set it in the night mode of detection even during day time.
- For the image noise to be reduced, you need to set a small gain in camera video settings. Do not use the software correction of the camera (e.g: noise reduction).
- Deactivate or reduce: WDR, noise reduction, edge enhancement.
- The camera and IR settings will be made during the night and day. Also make adjustments on a sunny day to make sure there are no shadows in the detection area: stairs, pillars, trees...Try to estimate the most difficult position of the Sun and place the camera so it isn't blinded by it.
- Change the scenario so the speed of cars to be in tune to the overall performance of the camera: (e.g: speed bumpers, barriers etc).
- Use one or more computers for detection and recognition, configured properly in regards of RAM/ processing power.
- Reduce the need for processing power by creating a detection window for the areas of interest
- Read the user guide.
- Contact **Metrici LPR** support engineers to get recommendations for what equipment to use in difficult situations.